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STEEL

For forty-eight years — IRON TRADE REVIEW

January 29, 1931

ARMCO

INGOT IRON SALUTES ITS SILVER ANNIVERSARY

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FOR EXACTING PURPOSES

1930

BECKER OVEN CAPACITY

During the past year, 754 Becker Type By-Product Coke Ovens were placed in operation or under construction. These ovens will have an aggregate annual carbonizing capacity of over 5,948,000 tons of coal.

Plant and Location	No. Ovens	Annual Coal Carbonizing Capacity Net Tons
Bethlehem Steel Company, Johnstown, Pa.	77	570,000
Bethlehem Steel Company, Sparrows Point, Md.	61	353,000
Colorado Fuel & Iron Company, Pueblo, Colo.	31	273,000
Consolidated Gas Company, Hunts Point, N. Y.	37	320,000
Consumers Power Company, Jackson, Michigan	11	35,000
Donner Hanna Coke Corp., Buffalo, N. Y.	51	359,000
Hudson Valley Fuel Corp., Troy, N. Y.	31	266,000
Illinois Steel Company, Gary, Ind.	138	1,230,000
Jones & Laughlin Steel Corp., Woodlawn, Pa.	81	852,000
New England Fuel & Transp. Co., Everett, Mass.	149	1,117,000
Providence Gas Company, Providence, R. I.	25	188,000
Rochester Gas & Electric Corp., Rochester, N. Y.	37	170,000
Weirton Steel Company, Weirton, W. Va.	25	215,000

KOPPERS

CONSTRUCTION COMPANY

CHICAGO PITTSBURGH NEW YORK

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Sheets, Blk. & Galv.			Alloy Steel	Machinery, etc.

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STEEL-SERVICE

Volume 88 Number 5

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

TRENCH warfare has set in on the Youngstown front following the decision of Bethlehem and Sheet & Tube to appeal from the Jenkins decision forbidding them to merge. Both pro and anti-merger forces are digging in for a long legal battle—of perhaps a year in the Ohio courts—since the attempt to overturn the Jenkins decree insures that neither side will accept any verdict as final so long as a court of review is open (Page 15). The appeal will be heard in March, when the suit of dissenters for the determination of a price on their Sheet & Tube common shares will be started. For Cyrus Eaton, chief dissenter, the appeal makes the Jenkins decision less of a pyrrhic victory, as for the time being at least it promotes his objective of preserving Sheet & Tube's identity. . . . While these proceedings, not to forget the action relative to the Bethlehem bonuses, are relieving unemployment among lawyers, the competitive situation in steel remains in a state of flux. It is not likely that Bethlehem will seek elsewhere to satisfy its ambition for a Middle West subsidiary so long as there is a possibility of clearing up the title to Sheet & Tube, yet it will be no less ambitious. And important legal objections raised by Judge Jenkins must be tested before more mergers are ventured. . . . Bethlehem, meanwhile, may proceed to round out its structural outlets, and its annual meeting Jan. 29 may develop its plans for certain eastern and Pittsburgh district fabricators (Page 15).

Steel To Build Behind Tariff Walls?

Canada would like to believe that the United States Steel Corp. is dusting off its plans for transforming its broad acres at Ojibway, on the Canadian side of the Detroit river just below Detroit, into a second Gary. There are plausible rumors (Page 16) that Premier Bennett will confer with Corporation officials on the occasion of his forthcoming visit to the states. If Canada promises a tariff that will divert the dominion's steel requirements to a domestic producer—well, that is speculation. It is a fact, however, that since Canada "protected" tin plate the Corporation has brought in at Ojibway tin plate capacity sufficient for most of Canada's needs. And if tariff barriers in other British possessions are raised against the United States, Ojibway might stand the Corporation in good stead.

Time Flies, but Congress Only Talks

Only 30 legislative days are left to congress for passage of the necessary appropriation bills, yet both houses fritter away their time on nonessentials and matters unlikely to receive final action this session. Fears for a special session are more widely entertained. . . . Among

Hydraulic ram placing 3420-pound cement blocks in outside wall of the two-mile water tunnel at the Ford Motor Co.'s plant, Fordson, Mich. The tunnel will have capacity for 913,600,000 gallons, daily, more than used by the cities of Detroit, Cincinnati, Washington and Philadelphia combined.

other things (Page 16), the interstate commerce commission is urging revision of the Transportation act; hearings will soon be held on the Kendall bill to prohibit imports produced by forced labor—meaning Russia; bills will be framed to carry out the Fish anti-communism report, including the exclusion of aliens.

Pensions May Blunt Next Depression

It is safe to predict that pension systems will derive marked impetus from the present distress in unemployment. The National Industrial Conference Board, sensing this situation and analyzing various retirement programs, concludes (Page 16) that contributory plans are best, insuring an appreciative attitude by employes, and are preferable to state pensions. . . . About March 1, it is understood, the Steel corporation will announce a revision of its pension system, aiming to eliminate exceptions and lay down standard practice for all of its subsidiaries (Page 16). . . . Washington now estimates that the number of unemployed now totals about 5,000,000, little changed from early December (Page 17). . . . Further employment legislation at this session of congress appears unlikely, and action probably will be limited to hearings on the Wagner bills.

Progress Runs with Fox, Chases with Hounds

Tank car manufacturers, facing an unemployment situation for their equipment from the vogue for pipe lines, are now constructing 22,000-gallon cars—more than double the capacity of old style cars (Page 66). . . . But steel pipe manufacturers are right at their heels. In a new electric weld process developed in Norway and transplanted to the United States pickling and shearing of skelp before subjecting it to the action of electrodes are taboo (Page 40). At five foreign plants utilizing this method welding speeds up to 80 feet a minute are in practice. . . . A newly-devised 7-stand mill eliminates one of the disturbing problems which makers of electric welded pipe encountered in early production—sizing and straightening. This mill not only sizes and straightens in one operation but also waits for the pipe forming mill to supply it with stock (Page 42).

Two Red Streaks, from Coast to Coast

Nineteen thirty was only a 75 per cent year in the Lake Superior iron ore trade, with shipments officially placed at 47,187,661 gross tons (Page 35). Were the ore moved in one train, in cars such as are used in shipping it from lower lake ports to the furnaces, the train would reach from New York to San Francisco and back and then some. Elevate an area of the earth one mile square 29 feet and you visualize the 1930 movement. Imagine a 78-story building one mile square—it would scarcely hold the billion and one-half tons of lake ore shipped in 50 years. . . . This ore is the base of the industrial pyramid which makes possible such great undertakings as the Second Western Metal Congress and Machinery Exposition, at San Francisco, Feb. 16-20 (Page 44). Over 150 manufacturers are exhibiting, and 13 engineering societies and local groups co-operating in technical sessions. . . . Also, such meetings as the first southern regional session of the American Foundrymen's association at Birmingham, Jan. 20-21, attended by over 300 (Page 50). Cupola operation and high-test gray iron bore the brunt of the discussion.

Steel Is On, Not In, Highways

While highway construction is one of the largest industries it uses only slightly more than 1 per cent of the national output of steel. But with traffic increasingly destructive on concrete, brick and asphalt, paving engineers are giving more attention to design and maintenance of pavements. A steel curbing including tie rods is a development in roadway construction (Page 47) and affords a new market for hot rolled strip steel. . . . Distribution of heat in material being annealed and duration of the treatment depend upon the amount of heat supplied to the furnace. European design employs a regulating device (Page 38) which protects the stock under treatment from excessive temperatures and automatically switches off the current at the end of the heating cycle. . . . Although tungsten carbide, a super-hard material for metal cutting tools and dies, has been commercially available in America for only three years, now comes a new material of tantalum carbide claiming special properties for certain adaptations, (Page 50). The alloy to be manufactured under license arrangements is composed of tantalum carbide combined with nickel as a binder and is said to have been subjected to severe tests.

Bad News of 1930 Now Out

The final psychological hazard hanging over from 1930 is being passed with the publication of fourth quarter financial reports, which give the entire picture of 1930 (Page 17). . . . Although steelmaking operations continue to crawl up, the rate is slower, and the improvement of January over December is less spectacular than a year ago (Page 67). . . . Memberships in the "I-Wish-I-Had-Club" are now selling cheaply, according to an English editor (Page 27). . . . When scrap dealers hold their annual convention in Cleveland in March they will tighten their defense of their industry (Page 71). . . . Engineers visualize economic life controlled, and cite seven "points of attack" (Page 17). . . . Myron C. Taylor, of the Steel corporation, finds the Machine Age a cog in the Divine plan (Page 17).

Appeal Ties Up Bethlehem Merger Another Year

DECISION of the Youngstown Sheet & Tube Co. and Bethlehem Steel Corp. to appeal from the injunction against the merger of the two companies granted in Youngstown, O., Dec. 29 by Judge David G. Jenkins means:

Bethlehem, despite its desire to gain a stronger foothold in the Middle West, and Sheet & Tube, much as it would welcome a union with Bethlehem, must continue as separate entities so long as the case is in court.

Barring a compromise between the proponents of the merger and the opponents led by Cyrus S. Eaton and his associates, which does not now appear likely, the litigation will continue at least a year in the state courts, and several months longer if the case is carried to the United States Supreme Court.

Bethlehem and Sheet & Tube evidently are intent on fighting it through, for vindication of their original actions as well as for a merger; Mr. Eaton and associates feel they have scored an important victory in the lower court, and whichever side wins in the appeal court it now is reasonably certain the case will be carried up to the highest court.

This means that the merger will continue blocked for an indefinite time, even more effectually than it was when Mr. Eaton obtained his original temporary injunction in April, 1930, following the Sheet & Tube vote to sell the company's assets to Bethlehem.

Bethlehem's decision being to concentrate its efforts along the lines of its first purpose, rather than "gracefully withdrawing," it appears evident that in the meantime it will not seek to establish operations in the Middle West by acquiring other properties.

Long drawn out and costly, complicated litigation is in prospect, as offshoots from the first case appear. While the appeal is heard in Youngstown, O., some time in March, there also will be in progress the hearing on the suit instituted by the Eaton interests to have the court of common pleas establish a fair price which Bethlehem would have to pay for dissenting Sheet & Tube stock. This hearing is set for March 10.

More than two years will have elapsed between the time when the original restraining order was issued and when the merger skies will be clear. So far between Bethlehem and Sheet & Tube there is only a strong union of sentiment.

Sheet & Tube directors met in Youngstown Jan. 24 and voted to appeal and at the same time Eugene G. Grace, Bethlehem president, announced in New York his company had decided on similar action. The time limit for an appeal expired Jan. 27. At Youngstown the vote was seven to three, with two directors not voting. Cyrus S. Eaton and Hugh B. Wick, Cleveland, and George C. Brainard, Youngstown, voted against an appeal. H. G. Dalton and S. Livingston Mather, Cleveland, did not vote.

Those voting to appeal were James A. Campbell, chairman; Frank Purnell, president; and Directors John Tod, Fred Tod, John W. Ford and T. J. Bray, all of Youngstown, and John L. Severance, Cleveland. Fred Tod is serving as a director *pro tem*, representing Richard Garlick, Youngstown, who is in Florida.

$50,000 Bond Posted

Within a few hours after the decision to appeal, Sheet & Tube counsel posted three bonds for $10,000 each with the court clerk. Bethlehem also was required to give two bonds for $10,000 each. The district court of appeals is composed of three judges, but as two of the judges have indicated they are disqualified because they own Sheet & Tube stock the case may be assigned to a court from another district. The court reviews the case on the evidence submitted in the court of common pleas or it may rehear the evidence.

If no appeal had been taken, the Eaton suit to establish a market price for Sheet & Tube stock would have been dropped, as there would have been no sale. But with the merger suit continuing and the ultimate outcome in doubt the stock suit will go on. The number of dissenting shares is estimated at about 350,000. When the merger was proposed the Eaton group refused $110 a share for their stock and wanted $175 to $250. The stock now is down to about $73. The court, however, would be required to fix a fair market price as of the date when it was proposed to buy the stock.

Bethlehem Bonus Suit Postponed to March 3

Newark, N. J.—Hearing of the suit brought by four stockholders in Bethlehem Steel Corp. to force restitution of $36,498,668 paid as bonuses to President E. G. Grace and other officers has been postponed to March 3 at plaintiffs' request. One of the complainants holds 500 shares of Bethlehem common stock; the remaining three have a total of 56 shares. The suit was to be heard here Thursday, Jan. 27.

Rumor Bethlehem Man Will Head McClintic-Marshall

Cleveland—G. H. Blakeley, vice president of the Bethlehem Steel Co., Bethlehem, Pa., in charge of structural and plate sales, has been appointed president of McClintic-Marshall Co., Pittsburgh, according to an unofficial report. The appointment is to become effective Feb. 1, it is said.

This adds emphasis to persistent reports that formal announcement of a merger of eastern fabricating inter-

—*Wide World Photo*

BRIDGING NEW YORK CITY'S WATER SUPPLY

This 750-foot bridge over Croton lake, a link of New York's water system, is being erected without the piers or any temporary work disturbing the surface of Croton lake. The towers are 150 feet high

ests, with which project the names of both the Bethlehem and McClintic-Marshall companies have been linked, will later be forthcoming. Some announcement may be made at the Bethlehem meeting Jan. 29.

Finds Contributory Pension Plans Growing in Favor

Extension throughout the field of industry of pension plans adequate in their provisions, equitably administered and soundly financed will do much toward removing any need or excuse for state pensions, according to the National Industrial Conference board, New York.

Present widespread interest in industrial pensions has been stimulated by agitation for state pensions, but in final analysis the board concludes "it is an expression of the growing social-mindedness of industrial excutives." Contributory types of pensions are growing in favor, the board's survey discloses. In these employes assist in providing for their old age, and the plans are free from any taint of paternalism.

U. S. Steel Revises Plan

New York—United States Steel Corp. will announce a revised retirement plan about March 1, it is understood. So far as possible, the revised plan is reported to eliminate special cases and to standardize retirement privileges for the various subsidiaries of the Corporation.

Sets Tariff Hearings

Washington—Among hearings announced by the new tariff commission to ascertain production costs are steel pens Feb. 2, bells Feb. 24, and agricultural band tools March 3.

Report Tariff Key to Steel Corp. Plans in Canada

New York—Officials of the United States Steel Corp. will not comment upon reports that it plans extensive construction at Ojibway, Ont., across the Detroit river from Detroit, where its subsidiary, the Canadian Steel Corp., now has wire and tin plate mills.

It is understood, however, that when Premier Bennett, of Canada, pays a visit to Washington shortly he will have a conference, before returning to Ottawa, with James A. Farrell, president, and other officials of the Steel corporation. Nothing official is known, but it is said the matter of tariff protection is the key to any Steel corporation expansion in the dominion.

During the war, the Steel corporation constructed concrete docks and took first steps in the erection of two blast furnace stacks at Ojibway. Within the past few years the Canadian subsidiary of the Corporation has erected wire mills there, and now is rolling tin plate, which is protected by the new Canadian tariff.

It is believed that the first step toward expansion at Ojibway would be the installation of additional finishing capacity rather than the construction of a blast furnace plant. The proximity of large quantities of scrap from the automobile industry might be an inducement for the addition of open-hearth furnaces.

The object of the Steel corporation in expanding Canada would be to supply the home market, with exportation from the dominion a possible assistance to intra-empire business.

Transportation is the basis of all large cities, but transportation in turn goes back to steel. Here is depicted a new traffic ramp leading to the Queensboro bridge in New York

The Business Week in Washington

CHAIRMAN Hawley of the house ways and means committee will hold hearings soon on the Kendall bill, to restrict imports produced by forced labor and aimed at imports from Russia, including manganese ore.

□ □ □

Secretary of War Hurley has been made chairman of the federal commission, created by congress last year, to study methods for removing profits from production of war material. The commission will set up a secretariat to effect co-operation between all government agencies which would purchase war materials.

□ □ □

A redrafted bill was introduced in the senate by Senator Wagner, of New York, to advance the planning of public works to stabilize industry and aid in the prevention of unemployment in times of business depression.

□ □ □

Bills are being introduced in the house and others will be later to carry out the suggestions made by the special house committee investigating communistic activities. One of the bills provides for the exclusion and expulsion of alien communists.

□ □ □

Decrease in tax collections for the six months ending Dec. 31 amounted to $107,179,600, says the bureau of internal revenue. Receipts for the six-month period totaled $1,396,272,075. December income tax collections were $494,975,100, a decline of $21,005,100.

□ □ □

Building operations in December in 293 cities were 8.1 per cent more than the cost of construction in November, according to the bureau of labor statistics, department of labor. The cost of this December construction was $128,909,902 or 2.6 per cent higher than for December, 1929.

□ □ □

Nomination of Eugene Meyer Jr., of New York, to be chairman of the federal reserve board has been sent back to the senate committee on banking and currency for further consideration.

□ □ □

Interstate commerce commission has recommended that congress repeal the recapture clause of the Transportation Act of 1920, whereby the carriers must surrender earnings in excess of 5¾ per cent, and that its rate-making powers be revised.

Probe Steel Price Methods?

Officials of the department of justice at Washington will not comment upon the report that agents of the department have been making inquiries

into methods of pricing steel and the manner in which business paper quotations are compiled.

Engineers Name Points To Control Nation's Economy

Seven "points of attack" for the ultimate control of the nation's economic life are recommended in a report adopted by the American Engineering council at its annual meeting in Washington, Jan. 15-17. The report, prepared by a committee headed by Ralph E. Flanders, Springfield, Vt., vice president, American Society of Mechanical Engineers, advocates the establishment of a competent agency to balance the forces of consumption, production and distribution. The "seven points" follow:

"Maintaining or increasing the consumption of goods and services; balancing plant, machinery and processes against production demands; balancing distribution agencies against consumer requirements; balancing manpower against production and distribution demands; controlling money and credit to satisfy the needs of government, business, and the individual; encouraging research activity to increase human well-being through development and progress in industry and business; balancing public works against public need."

Unemployment in December Estimated at 4,500,000

Washington—Between 4,500,000 and 5,000,000 persons were unemployed during the first week of December, according to an estimate announced Jan. 24 by the President's committee for employment. This is about 10 per cent of the number gainfully occupied during normal times. The estimate is based on a special census taken by the Metropolitan Life Insurance Co., through agencies in 46 cities. Agents visited 213,787 families. Col. Arthur Woods, head of the committee, said in his opinion conditions have not changed.

Production Boom Seen by Owen D. Young

New York—A distinct psychological improvement in the business situation has occurred since the middle of December, Owen D. Young, chairman, General Electric Co., told delegates to the New York State Bankers' association Jan. 23.

"When business sets prices at rock bottom and still creates no real buying enthusiasm it is certain conditions have reached dead center," he said. Buying will have to be resumed and a production boom will result, he predicted.

Machine-Age a Blessing to Mankind, Says M. C. Taylor

THE machine age is not a cold-blooded and cruel thing which seeks to exterminate man; it is man's finest expression through which great forces have been revealed to him by the Divine Hand, enabling him so to harness these forces and direct their use that they shall be man's servant and not his master."

The American radio audience, meaning millions of listeners, heard Myron C. Taylor, chairman finance committee, United States Steel Corp., speak these words over a nation-wide hookup, Jan. 27. He spoke in New York under auspices of the President's emergency committee for employment, his subject, "A Few Observations on Employment." In closing he made an appeal in behalf of the Red Cross, now raising funds to relieve distress.

"At the moment we are a bit stunned by the exploitation of great productive innovations," he said. "We may have traveled too fast and for the moment may have saturated the markets with all commodities, from the grains to the products of industry. But in the process there has been a general prosperity throughout the land, comparable to no other period in its history, and not equaled by any other nation in history."

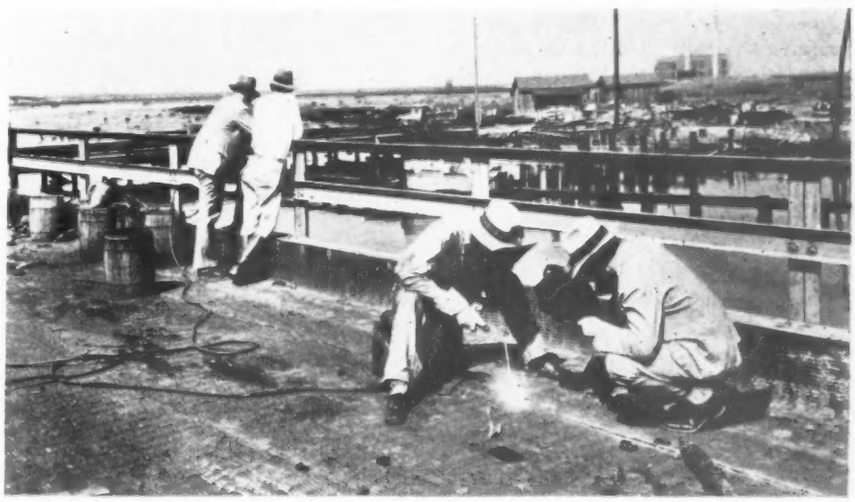
Triumphant over the whole field of recent mechanical development stands man, not the machine, Mr. Taylor emphasized.

"If there be any objective in this existence of ours worthy of the time and effort by us who are passing through it, it must be to raise mankind in general, not the particular few, but the entire race, to higher lines of understanding and co-operation, of enjoyment and well-being. The crusaders in this cause, those who seek through thoughtful and orderly channels to contribute to the well-being of the whole will have attained life's greatest reward, because it can be accomplished through no other way than service, and this sort of service is worthy of the talent and abilities of the greatest minds of the age."

Mr. Taylor briefly reviewed what the Steel corporation has done to ameliorate the effects of unemployment.

"For the period Jan. 1 to July 1, 1930, the number employed, either on whole or on part time work, was equivalent to an average of 221,123 employed for the entire period, as against an average for the year 1929 of 224,980," he said.

"For the month of December, the last period for which we have complete reports, there were employed on either full or part time in the various Corporation activities 226,-



ARC WELD PLATES TO MAKE BATTLEDECK FLOOR FOR BRIDGE

For the floor of a swing bridge in Jefferson county, Texas, ½-inch diamond floor plates 20 feet long by 4 feet wide were welded by a Lincoln Electric Co. process. The plates were spaced ½-inch apart for arc welding to the flanges of the floor beams. The roadway is 18 feet wide and on the side the plate turns up 1 foot to form the curb. The floor is made strong and rigid by welding the plates to the flanges of the floor beams on the under side with fillet welds 3 inches long spaced on 9-inch centers. The swing section shown above was built by the Coastal Construction Co., Orange, Tex.

614 men. This in a period when operation of the plants was on the basis of only 38 per cent.

"Attention is called to the fact that upward of 12,000 men have been given employment on construction work, in the advancement of which we have consistently carried out our construction program without change as outlined at President Hoover's conference in Washington on Nov. 21, 1929.

"The record of assistance rendered to employes and their families has been classified under three heads: Direct relief given by the Corporation; credits extended by the Corporation; relief extended by good fellowship clubs and other employes' welfare organizations. For the period between Oct. 1 and Dec. 31, 1930, our reports show under these three headings that total expenditures for relief had amounted to $210,782."

Dark Picture Painted at Governors' Labor Parley

Albany, N. Y.—No substantial reduction in unemployment can be expected within the next ten years. This was one of the predictions by economists and employment experts from several industrial states expressed here to governors attending Gov. Franklin D. Roosevelt's unemployment conference Friday, Jan. 23.

Other predictions are that there is no prospect of a check in advance of technological improvement, causing a surplus of labor; there will be little improvement in control of seasonal variations in employment; periods of prosperity will be shorter, and periods of depression longer; there will be a continuation in the fall of world commodity prices.

Governor Roosevelt called the conference of governors of seven eastern states to consider compulsory unemployment insurance plans. Most of them attended, others sent representatives.

Steel Plate Institute Announces Officers, Purpose

The Institute of Steel Plate Construction announces the election of the following officers for the ensuing year: President, W. S. Wheeler, Pennsylvania Engineering Co., New Castle, Pa.; vice president, Arthur Caverno, Lancaster Iron Works, New York; treasurer, B. P. McDaniels, McClintic-Marshall Co., Pittsburgh; secretary, J. W. Poushy, New York.

The program outlined for the institute at a recent meeting in New York includes the following:

1. Promoting among the members of the organization an intelligent and cordial understanding of the industry's problems.
2. Technical research to develop new uses and broader markets for steel plates.
3. Collection and dissemination of information on all matters of interest to the industry at large and about the industry in which the general public is concerned.
4. Establishment in the industry of uniform and ethical standards of practice, and in trade relations usages that are fair to all parties concerned.
5. Promotion of uniform standards and specifications especially as relates to construction that affects the general welfare.

Yale & Towne Will Move Connecticut Properties

Boston—Yale & Towne Mfg. Co. has decided to abandon practically all of its properties in Connecticut, where it has been a lively industrial unit for a long period of years. The abandoning of the Connecticut plants is the result of tax burdens, apparently, and President Allen states that about $1,000,000 of property will be transferred to Philadelphia.

Executive offices heretofore located at Stamford, Conn., will be removed to New York.

There are about ten branch factories of the company in Connecticut, all of which are to be abandoned, and it is also intimated that the Cincinnati plant is to be affected.

Gives Testimonial Dinner

Executives and employes of the Warren Foundry & Pipe Corp., Phillipsburg, N. J., recently tendered a testimonial dinner to William H. Hulick, who resigned as vice president, Jan. 1, after service of 41 years. Mr. Hulick was presented with a loving cup, a gift of the Phillipsburg employes. Alfred Haley, a plant foreman, served as toastmaster, with Leonard Peckitt, president, one of the principal speakers, who paid warm tribute to the character and achievements of Mr. Hulick. John C. Tirrell, general foreman, traced the growth of the company during Mr. Hulick's affiliation.

Award Steel Segment Order

New York—Duquesne Steel Foundry Co., Pittsburgh, has been awarded 900 tons of steel segments for a new tunnel under the East river, New York and Brooklyn, N. Y.

Plan 1932 Auto Tags

Eastern states are already beginning to look to their 1932 automobile license plates. Pennsylvania, through its department of property and supplies, in March will begin negotiation for steel for plates to be manufactured in the western Pennsylvania penitentiary. About 1100 tons of steel were required for 1931. The motor vehicle department of New Hampshire, at Concord, N. H., is now inquiring for its 1932 plates.

Base Iron Price on Plates

Lukens Steel Co., Coatesville, Pa., has placed a contract with the Alan Wood Steel Co., Conshohocken, Pa., for 80 per cent of its requirements for basic pig iron for one year on a sliding scale based upon plates f.o.b. Coatesville.

Financial News of Steel Industry

Chain Belt Co., Milwaukee, reports net profit of $514,711 for year ending Dec. 31, 1930, against $845,408 in 1929.

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Jaeger Machine Co., Cleveland, reports net profit of $257,319 for year ended Nov. 30, against $527,601 in previous fiscal year.

□ □ □

M. A. Hanna Co., Cleveland, has declared regular quarterly preferred dividend of $1.75, payable March 20 to record March 5.

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Iron Fireman Mfg. Co., Portland, Oreg., has declared increased quarterly dividend of 40 cents, payable March 1 to record Feb. 14.

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Joseph T. Ryerson & Son Inc., Chicago, reports net profit of $827,826 equivalent to $2.06 a share, against $2,308,084 net profit, or $5.77 a share in 1929.

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American Forging & Socket Co., Pontiac, Mich., has declared regular quarterly dividend of 15 cents a common share, payable Feb. 1 to record Jan. 25.

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Ferry Cap & Set Screw Co., Cleveland, had loss of $67,793 for 1930. Balance sheet reveals current assets of $504,956 compared with current liabilities of $34,488.

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National Steel Corp., Pittsburgh, is advertising an unstated amount of 5 per cent debentures to mature in 1941 through the Guardian Detroit Co., Detroit.

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Inland Steel Co., Chicago, is publicly offering a $15,000,000 first mortgage sinking fund 4½ per cent gold bond, series B, issue at 96½ and accrued interest to yield 4.68 per cent.

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Reynolds Spring Co., Jackson, Mich., has authorized reduction in

capital stock whereby one new share of common will be issued for five present shares. No new financing is involved.

□ □ □

General Fireproofing Co., Youngstown, O., net earnings for 1930 were $2.30 a common share, against $3.33 in 1929 and $2.34 in 1928.

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United States Pipe & Foundry Co., East Burlington, N. J., had net profit of $2,881,046, or $3.42 a share in 1930, as compared with $2,581,230, or $2.74 a share in 1929.

□ □ □

Acme Steel Co., Chicago, net income declined 63 per cent in 1930 compared with 1929. Net income in 1930 was $940,949, or $2.74 a share, after charges and federal taxes. In 1929 company earned $9.30 a share or total net of $2,553,214.

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Campbell, Wyant & Cannon Foundry Co., Muskegon Mich., has declared quarterly dividend of 25 cents a share, payable March 1 to record Feb. 14.

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Buckeye Steel Castings Co., Columbus, O., has declared regular quarterly of 62½ cents, payable Feb. 2.

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Humphryes Mfg. Co., Mansfield, O., has declared regular quarterly of $2 on 8 per cent preferred, payable March 31 to record March 17.

J. & L. Nets $9,093,287

Jones & Laughlin Steel Corp., Pittsburgh, reports fourth quarter net income after interest, depreciation and depletion charges, of $283,754, against $3,852,836 a year ago. After fourth-quarter dividends the deficit was $1,464,139.

Net for 1930 was $9,093,287 compared with $20,848,749 in 1929 and $15,568,687 in 1928. Surplus last year was $2,101,714, against $12,128,174 in 1929.

U. S. Steel Profit in 1930 Is 47 Per Cent Less Than 1929

UNITED STATES STEEL CORP. earned $9.12 a common share in 1930, compared with $19.96, excluding special and net adjustments, in 1929 and $21.19 a share including the latter items in 1929.

Net profit for 1930 was $104,465,774, as compiled from quarterly reports, against $197,592,060 in 1929. Total earnings for the fourth quarter of 1930 were $23,083,791 after federal taxes but before interest, depreciation and depletion, which was equal to 70 cents a share on 8,687,435 common shares now outstanding. In the third quarter total earnings were $37,995,299, against second quarter earnings of $47,061,304 and first quarter of $49,615,397. Each succeeding quarter of 1930 has been less than its predecessor, in point of total earnings.

By months, total earnings declined consecutively in the seven months from May to December. In the latter month this figure only reached $4,190,958; May's was $16,570,790. However, the December figure is subject to revision on completion of audit of accounts for the year.

Net profit for the fourth quarter of 1930 was $12,366,088, but after both common and preferred dividend charges aggregating $21,510,985, a deficit of $9,144,897 for the three-month period was incurred. In the like quarter of 1929 a surplus of $19,126,425 was carried forward.

The regular quarterly dividends of $1.75 each on the preferred and common stock were declared, common payable March 30 to record Feb. 28; the prefered payable Feb. 27 to record Jan. 31.

Steel Corporation's Quarterly Report Summarized

	Fourth Quar. 1930	Third Quar. 1930	Fourth Quar. 1929
Total earnings	$23,083,791	$37,995,299	$56,385,334
Less depreciation, depletion, etc.	13,003,439	14,813,016	15,816,892
Net income	10,080,352	23,182,283	40,568,442
Less bond interest	1,409,690	1,399,978	596,084
Balance	8,670,662	21,782,305	39,972,358
Add special income*	3,695,426	2,412,857	
Total	12,366,088	24,195,162	39,972,358
Dividends			
Preferred	6,304,920	6,304,919	6,304,920
Common	15,206,065	15,185,293	14,541,013
Surplus	†9,144,897	2,704,950	19,126,425

*Quarterly apportionment of net interest on federal tax refunds.
†Deficit.

Inland Earns $5.41 a Share

Inland Steel Co., Chicago, reports net income for 1930 of $6,498,967 after depreciation, depletion, interest and federal taxes, equal to $5.41 a share, against $11,712,374 net for 1929, or $9.76 a share. Directors have declared the regular quarterly of $1, payable March 2 to record Feb. 13.

Monthly Earnings of United States Steel Corp.

	1930	1929	1928
January	$15,404,359	$18,759,098	$11,899,549
February	16,107,410	19,080,941	13,581,337
March	18,103,628	22,265,342	15,453,146
First quarter	49,615,397	60,105,381	40,934,032
April	16,113,583	22,361,428	13,927,481
May	16,570,790	25,604,641	16,646,845
June	14,376,931	24,029,392	16,538,660
Second quarter	47,061,304	71,995,461	46,932,986
First Half	96,676,701	132,100,842	87,867,018
July	13,479,870	24,303,058	16,133,679
August	13,000,496	24,687,088	18,597,178
September	11,514,933	21,183,566	17,417,618
Third quarter	37,995,299	70,173,713	52,148,475
Nine months	134,672,000	202,274,555	140,015,493
October	10,943,449	22,066,325	19,399,051
November	7,949,384	18,367,105	17,364,722
December	4,190,958	66,014,467	16,525,657
Fourth quarter	23,083,791	56,447,897	53,289,432
Year	$157,755,791	$258,722,453	$193,304,927

Foreign Trade in Iron and Steel Products Lower in 1930

EXPORTS of iron and steel products totaled 1,985,025 tons in 1930, or 34.7 per cent less than in 1929 when 3,032,352 tons were shipped abroad. Imports in 1930 amounted to 538,089 tons, which was 28.6 per cent below the 1929 trade of 739,004 tons, according to preliminary report of the iron and steel division, bureau of foreign and domestic commerce.

Exports of iron and steel in 1928 were 2,862,997 tons, with the exception of 1929, the highest since 1920. The increase in tonnage in 1928 was the greatest for any year since 1915. Imports of 1928 were above both the 1929 and 1930 mark with 782,694 tons.

IMPORTS AND EXPORTS
Gross Tons

	——1930——		——1929——	
	Imports	Exports	Imports	Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	43,351	197,426	58,146	259,711
Mar.	55,604	238,333	52,747	270,925
April	52,650	208,640	54,337	277,580
May	52,814	196,120	74,272	261,516
June	48,955	159,392	63,635	247,811
July	39,700	131,772	71,378	270,532
Aug.	35,387	151,235	83,969	242,856
Sept.	40,285	131,211	60,974	222,408
Oct.	38,344	131,850	63,226	247,646
Nov.	43,095	111,968	54,041	241,829
Dec.	40,754	101,988	47,486	215,242
Total	538,089	1,985,025	739,004	3,032,352

ORIGIN OF DECEMBER IMPORTS
Gross Tons

	Steel Ingots, Blooms	Steel Scrap	Cast Iron Pipe	Steel Bars
Austria	.....	.....	.....	15
Belgium	664	.....	148	1,864
Canada	1	1,158	.....	27
France	1,078	.....	1,741	827
Germany	37	.....	.....	799
Norway	.....	.....	.....	3
Sweden	87	64	.....	207
United King.	59	.....	.....	71
Total	1,926	1,222	1,889	3,813

Likewise does 1930 compare unfavorably even with 1927, when in the latter year exports were 2,180,969, and imports were 749,992 tons.

For December of 1930, exports were only 101,988 tons, 9980 tons less than in November, and the low month of the year. December import trade was also lower than in November, only 40,754 tons being imported, however, not a low for the year.

The 1,052,832-ton reduction noted in the volume of iron and steel exports in 1930 resulted from decreased shipments in all but two of the 45 classes of material included in the 1,985,025 total. Many of these reductions were in relatively small amounts and their effect on the total figure was correspondingly light.

But in addition to these the 206,545,-ton drop in scrap shipments must be noted, as must those in plain structural shapes, 145,732 tons; in steel bars, 102,806 tons; in plates, 95,355 tons; in welded pipe, 51,391 tons; in casing and oil line pipe, 51,484 tons.

IMPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	Dec. 1930	Nov. 1930	Dec. 1929
Pig iron	13,881	18,292	17,172
Sponge iron	.....	.....	
Ferromanganese, spiegeleisen*	1,111	2,865	4,004
Ferrochrome (3)	.....	.....	48
Scrap	1,222	1,390	1,759
Ingots, blooms	1,926	2,162	1,705
Concrete bars	3,369	1,492	2,850
Hollow bar, drill Steel	48	73	
Merch. steel bars	3,813	3,063	
Iron slabs	.....	.....	319
Iron bars	203	75	
Wire rods	684	582	1,039
Boiler, other plate	.....	101	.....
Sheets, skelp	2,082	1,711	2,540
Tin plate	6	24	19
Structural shapes	5,041	4,355	8,243
Sheet piling	.....	.....	
Rails, fastenings	198	558	199
Cast iron pipe and fittings	1,889	841	975
Welded pipe	375	808	3,020
Other pipe	1,502	1,162	
Barbed wire	377	279	544
Round wire	115	216	476
Flat wire, strip	41	37	154
Wire rope, strand	180	195	222
Other wire	35	3	63
Hoops and bands	1,777	1,587	1,563
Nails, tacks	479	711	740
Bolts, nuts, rivets	37	7	74
Castings and forg.	87	105	125
Total	40,754	43,095	48,261

Figures have been corrected to June 17, 1930, the last day on which the Tariff Act of 1922 was in effect. *Manganese content. †Chromium content.

DESTINATION OF DECEMBER IRON AND STEEL EXPORTS
Gross Tons

	Galvan. Steel Sheets	Tin, Terne Plate	Black Sheets	Steel Bars
Argentina	128	1,730	885	9
Brazil	180	148	61	10
Canada	1,011	73	14,665	1,273
Cent. America	49	.....	7	204
Chile	.....	332	1,741	187
China	163	778	94	327
Columbia	292	69	12	8
Cuba	252	337	23	73
Dutch E. Ind.	547	.....	2	6
France	.....	.....	401	.....
Greece	20	150	.....	.....
Italy	.....	.....	21	.....
Japan	.....	1,481	227	.....
Java	112	57	5	16
Mexico	327	626	107	64
Norway	79	.....	.....	.....
Panama	.....	.....	.....	60
Philippines	680	503	53	117
Peru	6	21	1	14
Russia	.....	787	.....	12
United King.	.....	.....	554	306
Uruguay	86	856	31	3
Venezuela	141	1	1	30
Total	4,799	8,912	19,088	2,932

ORIGIN OF DECEMBER IMPORTS
Gross Tons

	Iron Ore	Pig Iron	Manganese	Ferro-manganese
Australia	14,200	.....	.....	.....
Algeria, Tunis	7,000	.....	.....	.....
Belgium	.....	.....	.....	79
Brazil	.....	.....	9,171	.....
Brit. India	.....	13,591	3,761	.....
Canada	.....	48	.....	190
Chile	107,283	.....	.....	.....
Germany	.....	.....	.....	322
Gold Coast	.....	.....	6,051	.....
Italy	.....	.....	.....	213
Mexico	157	47	.....	.....
Netherlands	.....	47	.....	.....
Norway	.....	51	.....	234
Russia	31,754	.....	9,734	.....
Spain	6,500	.....	.....	.....
Sweden	9,026	40	.....	.....
United King.	.....	95	.....	73
Total	175,920	13,881	28,771	1,111

EXPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	Dec. 1930	Nov. 1930	Dec. 1929
Pig iron, not includ. ferroalloys	474	565	1,618
Ferromang. and spiegeleisen	.....	51	83
Scrap	10,980	7,917	56,473
Ingots, blooms	319	1,166	896
Iron bars	128	91	221
Steel bars	2,932	3,350	8,268
Alloy steel bars	435	244	1,377
Wire rods	3,013	2,543	3,056
Plates	4,396	6,743	11,305
Skelp	3,248	10,825	1,636
Iron sheets, galv.*	234	426	.....
Steel sheets, galv.*	4,790	6,270	12,078
Steel sheets, bl'k	19,088	11,651	9,365
Iron sheets, bl'k	714	868	1,205
Hoops, bands, strip	1,824	2,125	5,207
Tin, terneplate	8,912	13,302	24,522
Shapes, not fabr.	9,881	8,579	14,841
Shapes, fabr.	4,096	6,414	5,848
Tanks, complete, knocked down†	864	4,167	.....
Metal lath	350	297	470
Steel rails	2,546	3,339	10,034
Rail fastenings	1,085	1,558	2,938
Boiler tubes	765	900	1,918
Casing, line pipe	4,160	2,533	6,983
Malleable screwed pipe fittings	903	816	1,195
Cast iron screwed pipe fittings	339	300	1,045
Cast iron pressure pipe, fittings	1,079	504	1,986
Cast iron soil pipe and fittings	640	983	616
Black galv. welded wrought pipe*	428	444	15,278
Black and gal. welded steel pipe*	4,418	4,252	.....
Plain wire	1,689	1,985	3,275
Barbed wire, fence	1,842	2,473	4,397
Woven wire screen cloth	84	81	113
Wire rope	270	227	375
Insulated wire, cable	74	20	63
Other wire	462	393	630
Wire nails	608	781	806
Nails, not wire	452	216	387
Tacks	43	24	55
Bolts, nuts, rivets	693	533	1,479
Iron castings	589	391	697
Steel castings	314	465	503
Car wheels, axles	1,227	586	1,177
Horseshoes	5	15	9
Forgings	586	555	710
Total	101,988	111,968	215,338

*Combined prior to 1930. †Included in miscellaneous class prior to 1930.

Industrial Men in the Day's News

Dr. Victor O. Homerberg, Technical Director, Nitralloy Corp., New York

INTERESTED academically in metallurgy since 1918, he has devoted particular attention industrially to nitriding since its introduction in this country.

HE served as consultant for a number of companies and then became research metallurgist for Ludlum Steel Co., remaining until last Nov. 1, the date of his latest appointment.

HE has written numerous articles on metallurgy and metallography and has served on technical society nitriding committees.

BECAUSE his interest in nitriding and nitriding alloys dates from their introduction into this country, Dr. Victor O. Homerberg, associate professor of physical metallurgy, Massachusetts Institute of Technology, Boston, is recognized as an authority on those subjects. He is broadening his work in connection with them in the industrial field, having recently been appointed technical director of the Nitralloy Corp., 52 Broadway, New York, which controls through assignment by Aubert & Duval, Fres., Paris, France, the United States patents issued to Dr. Adolph Fry of the Friedrich Krupp Aktiengesellschaft, Essen, Germany, and many other patents and applications relating to the production of steels for nitriding and the art of nitriding.

Born on a farm near Balaton, Minn., Dr. Homerberg attended country school, continuing his public school education at Windom, Minn. In 1913 he was graduated with a "distinguished" grade from Philadelphia college of pharmacy and science. Four years later he entered Massachusetts Institute of Technology and was graduated in 1921 with an S. B. degree in chemical engineering. He received his Sc. D. degree in metallurgy in 1927. He became assistant in analytical chemistry at that institution in 1918, instructor in metallography in 1921, assistant professor of physical metallurgy in 1925, and associate professor in 1928.

Dr. Homerberg has acted as consultant for a number of manufacturing companies, including Trimont Mfg. Co., Washburn Wire Co., Wickwire Spencer Steel Co., Ludlum Steel Co., and others. He became research metallurgist for the Ludlum company, Watervliet, N. Y., with the introduction of the nitriding process into this country, which position he held until Nov. 1, 1930, when his new appointment as technical director of the Nitralloy Corp. became effective.

He has published several articles on metallurgical subjects and is co-author of the textbook "Principles of Metallography." He is a member of the British Iron and Steel institute, British Institute of Metals, American Institute of Mining and Metallurgical Engineers and American Society for Steel Treating. In connection with the latter organization he serves as chairman of the publication and nitriding committees.

W B. HIGGINS of Pleasant Valley, W. Va., has tendered his resignation as vice president in charge of sales of Wheeling Steel Corp., Wheeling, W. Va., the position held by him since January, 1926. He has been connected with the Wheeling company and La Belle Iron Works, which became part of the Wheeling company, for about 30 years.

E. N. McKelvey, general manager of the Steubenville, O., works of Wheeling Steel Corp. since 1924, resigned Jan. 24, effective Feb. 1. F. C. Swartz, formerly with American Steel & Wire Co., Cleveland, but who has been Mr. McKelvey's assistant, has been appointed to succeed him. Mr. McKelvey went to Steubenville in 1924 after having been assistant to the president of the company at the Wheeling office.

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C. King Woodbridge has resigned as president of American Machine & Metals Inc., New York. He is succeeded by P. G. Mumford.

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William McFadden, formerly vice president, Naugatuck Crucible Co., Naugatuck, Conn., has joined the Bartley Crucible & Refractories Co., Trenton, N. J., in an executive capacity. He will be located at the general offices of the company at Trenton.

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A. C. Dunthrone, A. M. I. C. E., of the Whessoe Foundry & Engineering Co. Ltd., Darlington, England, is spending a few weeks in Cleveland consulting with officials and engineers of Arthur G. McKee & Co., engineers and contractors. The Whessoe company recently became exclusive manufacturing agent in Great Britain for the manufacture of Mc-

Kee oil refinery and blast furnace equipment.

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A. J. Tout, formerly with Wire Wheel Corp., Buffalo, has been appointed manager of Bissett Steel Co., 1449 Niagara street, Buffalo.

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T. F. Connors, associated with American Fork & Hoe Co., Cleveland, for some time, has been transferred to Memphis, Tenn.

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K. H. Gayle Jr., for the past year affiliated with Ingalls Iron Works Co., Verona, Pa., in a sales capacity, will join its New York office Feb. 1 in a similar capacity.

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Col. T. Sydney Morrisey, who for six years was vice president and general manager of Combustion Engineering Corp. Ltd., has been appointed vice president of United Engineers & Constructors of Canada Ltd., in charge of the Toronto, Ont., office.

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W. W. Harry, for about four years with the New York reinforcing bar sales department of Edward T. Edwards, Columbia, Pa., has resigned to become associated in a similar capacity with Atwill Steel Products Co., 50 Church street, New York.

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Raycroft Walsh, formerly vice president and general manager of Hamilton Standard Propeller Corp., Homestead, Pa., has been elected president. He succeeds E. E. Wilson, who resigned to devote himself more actively to the Sikorsky Aviation Corp. of which he is president.

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Carl A. Salmonsen, formerly superintendent of section K, General Electric Co., Schenectady, N. Y., has been promoted to works manager of Canadian General Electric Co., Peterborough, Ont. He has been serving as superintendent of Peterborough works since August, 1928. He now succeeds E. G. Patterson, who retired after 41 years service.

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C. M. Williams has been appointed resident salesman at Indianapolis for the Pittsburgh Crucible Steel Co., Pittsburgh. He had been identified with the sales department of this company at Pittsburgh for several years and has been succeeded there by J. A. Ross, secretary. Mr. Ross has been succeeded by F. N. Joyce who had been located at the company's plant at Midland, Pa.

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Paul Mackall, vice president in charge of sales, Bethlehem Steel Co., Bethlehem, Pa., sailed Jan. 23 for Brazil. He expects to return in five weeks.

Neil E. Salsich has resigned as manager of sales in the frog, switch and light rail department of Bethlehem Steel Co., and has been succeeded by J. B. Honeycutt of the New York sales office. Mr. Salsich will join the sales organization of the Jeffrey Mfg. Co., Columbus, O.

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John M. Adams, who has been identified with the Wyckoff Drawn Steel Co., Ambridge, Pa., for the past six years, has been named works manager. He formerly was located at Oberlin, O.

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Raymond K. Albright, who has been associated with Buffalo Bolt Co., Buffalo, since 1898, has been elected president in succession to the late Ralph Plumb. Mr. Albright has been executive manager since 1905 when he became vice president. In 1921 he was elected treasurer in which office he continues.

Ralph Hudson Plumb has been elected a director of the company. J. J. McLaughlin was elected vice president in charge of operations, and Proctor Carr vice president in charge of sales.

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Milton Lewis Hersey, president of Milton Hersey Co., Montreal, Que., industrial and consulting chemist and engineer, has also been appointed president of Canadian Tube & Steel Products Ltd., Montreal, to succeed the late James L. Waldie. Mr. Hersey also is chief chemist for Canadian Pacific and for Canadian Northern railways and is director in several industrial corporations. He was a member of the Montreal harbor commission for several years.

Charles M. Thomson, general superintendent of Canadian Tube & Steel Products Ltd., since 1922, has been appointed vice president in charge of manufacturing. He has been with the company since 1918 when he was in charge of shell manufacture.

Other officers are A. H. Hough, vice president and general sales manager, and P. B. Nash, secretary-treasurer. Directors are: Milton L. Hersey, A. H. Hough, John W. Ross, George Hunter, J. C. Hodgson, H. H. Vaughan, Hon. Senator Webster and Stanley Brock.

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E. E. Klooz has resigned as president of Industrial Silica Corp., Youngstown, O., formed some time

(*Concluded on Page* 64)

Gray Iron Foundry Group Casts Ray of Optimism

Production by foundry members of the Gray Iron institute, Cleveland, failed to improve in December and at 48.5 per cent of the average monthly output during the past three years, was down two points from November's 50.6 per cent.

New business percentage rose ten points to 47.2, unfilled orders were up 12 points to 36.2 per cent for the month. Material received dropped seven points to 49.7 per cent and material on hand gained a like amount to stand at 124.5 per cent.

Indicating optimism, of 133 foundries, four reported the business outlook good against none of this opinion in November, 53 said it was fair compared to 43 in November, 52 said it was poor contrasted to acknowledgement of 64 in November, and 24 found business bad in December compared with 23 of this belief in the prior month.

Auto Output Turns After Seven-Month Decline

Automobile production, which had declined for seven consecutive months in 1930, at last turned upward and December's total at 155,601 was not only better than November's but a much better showing than December of 1929. Passenger car gains were the largest, trucks remaining about constant. Monthly comparisons by the department of commerce follow:

	United States			Canada
		Passenger		
1929	Total	Cars	Trucks	Total
Dec.	120,007	91,011	27,513	5,495
(Year)	5,358,420	4,569,811	771,020	263,295
1930				
Jan.	275,374	236,145	38,657	10,388
Feb.	346,940	296,461	49,457	15,548
Mar.	401,313	335,720	64,204	20,730
Apr.	443,038	374,913	67,560	24,257
May	417,406	362,522	54,370	24,672
June	335,477	289,245	45,773	15,090
July	262,364	222,459	39,664	10,188
Aug.	223,036	187,037	35,748	9,792
Sept.	216,877	175,311	41,157	7,957
Oct.	150,044	112,209	37,244	4,541
Nov.	129,437	97,528	31,300	5,407
Dec.	155,601	122,645	31,531	*.....
(Yr.)	3,356,907	2,812,195	180,101	†148,570

*Not available. †11 months.

New York Shape Awards 30 Per Cent Under 1929

Structural steel awards in metropolitan New York district, according to Structural Steel Board of Trade of New York, decreased 29.72 per cent in 1930 from 1929, which in turn was 44.55 greater than 1928. Subways, bridges and engineering work are excluded in the following comparison in net tons:

Month	1930 Tons	1929 Tons	1928 Tons
Jan.	34,951	27,626	30,204
Feb.	38,535	24,609	24,850
March	28,943	72,003	32,299
April	26,726	37,543	28,214
May	55,431	34,575	46,002
June	49,833	47,299	38,600
July	62,103	57,775	57,147
Aug.	60,169	74,566	43,305
Sept.	27,166	56,155	39,846
Oct.	31,173	85,699	50,264
Nov.	25,563	49,301	28,126
Dec.	24,563	105,711	39,402
Total	467,533	662,428	458,259
Monthly average	38,961	55,202	38,188

Obituaries

CHARLES D. DYER, 72, who on Dec. 31, 1927, resigned as a member of W. P. Snyder & Co., Pittsburgh, vice president of Shenango Furnace Co., and secretary of Shenango Steamship Co., after a 24-year connection, died Jan. 22 at his home in Ben Avon, near Pittsburgh.

He was born in Allegheny, Pa. When the Clairton, Pa., works of the old Clairton Steel Co. was built by William P. Snyder, Mr. Dyer became traffic manager. In 1902 he served as traffic manager also of W. P. Snyder & Co., and Shenango Furnace Co. He later was traffic manager for the receiver of Clairton Steel Co. and general freight agent for the Crucible Steel Co. of America. When in 1904 the Clairton company passed to the United States Steel Corp. he became actively identified with the Snyder and Shenango companies. He was made assistant to the president of Shenango in January, 1905, and vice president in February, 1906. He remained an officer in these and affiliated companies until his retirement in 1927 and since served in an advisory capacity.

Mr. Dyer became president of the American Pig Iron association in February, 1918, when he succeeded J. G. Butler Jr., who then became its chairman. During the World war he was a member of the sub-committee of the American Iron and Steel institute in charge of pig iron, iron ore and lake transportation for the War Industries board.

□ □ □

A. E. Norris, identified as mechanical engineer with Mead-Morrison Mfg. Co., East Boston, Mass., or its subsidiaries for 35 years, died at his Brookline, Mass., home Jan. 15. Latterly he had been chief engineer for the Mead-Morrison company.

□ □ □

Frederick H. Stevens, 72, former president of Brooks Locomotive Works division, American Locomotive Works, Dunkirk, N. Y., died Jan. 23 at Pasadena, Calif., where he had been residing since his retirement. He continued as a director until his death.

□ □ □

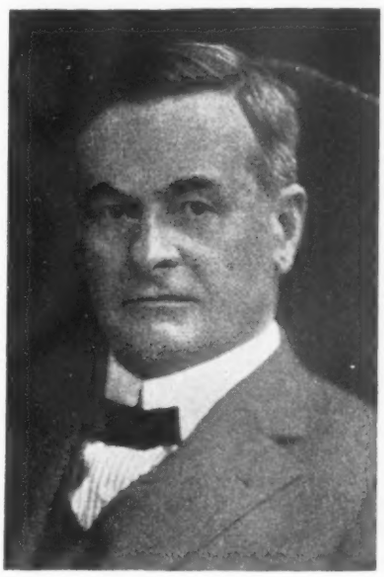
Harry Darlington Jr., 43, identified with several iron and steel interests in the Pittsburgh district, died Jan. 25 in that city. He was a director of Follansbee Bros. Co., Pittsburgh Steel Foundry Corp., and the Pittsburgh Forge & Iron Co. Mr. Darlington was a graduate of Yale university.

□ □ □

George A. Ward, 66, designing engineer of the Wilputte Coke Oven Corp., New York, died at Montclair, N. J., Jan. 19., following a recent operation. Mr. Ward had been associated with Wilputte company for a number of years. He was graduated from the Worcester Polytechnic institute in 1887. He was a member of the American Society of Mechanical Engineers.

□ □ □

John F. Lewis, 68, for 50 years identified with the Edgar Thomson works of Carnegie Steel Co., Pittsburgh, died Jan. 26 at his home in that city. Mr. Lewis entered the steel business with the Carnegie company as a hammer boy in 1875 at the age of 12 and in 1903 became assistant general superintendent of the Thomson works, retiring in 1925. Mr. Lewis invented a number of devices used in the open-hearth and blast furnace departments.



Charles D. Dyer

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Moses Morgan, 90, pioneer industrial leader of southern Ohio, died at Jackson, O., Jan. 17. He was the second coal operator to open up a mine in the Jackson Hill coal section. He established the Jackson Iron & Steel Co., Jackson, and Aetna Fire Brick Co., Oak Hill, O.

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Alfred E. Howell, who recently resigned as manager, Somerville Stove Works, Somerville, N. J., and returned to Nashville, Tenn., where he held important positions for many years, died there Jan. 25. He had been identified with Philips & Buttdorff Mfg. Co., Nashville, for a long period, being production manager of its stove foundry for ten years. In 1921 he acquired a substantial interest in Somerville Stove Works and was appointed general manager. He was an active member of American Foundrymen's association and served as vice president for two years. He was president of that organization from October, 1913, to September, 1914. From 1914 to 1927 he served on its board of directors.

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Charles L. Turley, 39, formerly superintendent of steel works, Jones & Laughlin Steel Corp., Aliquippa, Pa., died in Los Angeles Jan. 17. He was born in Portsmouth, O., and was graduated from Cornell university in 1914. He entered the employ of Wheeling Steel Corp., Wheeling, W. Va., where he rose to be assistant superintendent in the blast furnace department. He left in January, 1921, to become assistant superintendent in the blooming department, Jones & Laughlin Steel Corp., and in November, 1922, became superintendent there. In December, 1923, he was given full charge of steel works, where he remained until his resignation in September, 1929, on account of poor health.

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John Davey, superintendent of Canton Tin Plate Corp., Canton, O., since its organization a few months ago, died at his Mansfield, O., home Jan. 25. He was one of seven brothers, who commenced in 1915 to operate the old plant of National Rolling Mill Co., Mansfield, O., as Mansfield Sheet & Tin Plate Co., and which was merged with others in 1928 to form the Empire Steel Corp. Mr. Davey served as superintendent and director of both. The Empire merger took in the Empire Steel Co., Cleveland, in which plant Mr. Davey had been employed years before with three of his brothers, Albert, Harold and Thomas.

□ □ □

Howard Evans, 78, whose entire business career was spent with J. W. Paxson Co., Philadelphia, manufacturer of and dealer in foundry supplies, until his retirement several years ago when this company reorganized, died in that city Jan. 21. Mr. Evans was elected secretary of the Philadelphia Foundrymen's association at its organization in 1891 and remained in that office until his resignation March 4, 1930, a period of 38 years. He was then elected an honorary life member. Mr. Evans also performed the preliminary secretarial work in the formation of American Foundrymen's association in 1896 and served as treasurer from 1896 to 1900.

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Walter Ritner, prominent bridge

(*Concluded on Page 77*)

Here and There in Industry

McCANN-HARRISON CORP., Cleveland, builder of automatic furnaces and equipment, has booked orders recently for a 12-ton double-drive pair furnace; a 15-ton double-drive pack furnace and a 15-ton single-drive combination open annealing and normalizing furnace from the Newport Rolling Mill Co., Newport, Ky. An order from the Otis Steel Co., Cleveland, is for a 6½-ton single-drive pack furnace. These furnaces are of the walking-beam type, fired by natural gas, arranged for multiple-zone automatic temperature control.

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Shartle Bros Machine Co., Middletown, O., has bought the Haywood Pump & Blower Co., Appleton, Wis.

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Vorys Bros. Inc., Columbus, O., has been appointed distributor for the Republic Steel Corp., Youngstown, O., of its Enduro Nirosta KA2.

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Eastern Metals Corp., Philadelphia, has changed its name to Carter, Donlevy Co. No other changes are made, personnel and location being the same.

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Federal Press Co., Elkhart, Ind., has appointed Marshall & Huschart Machinery Co., 571 Washington boulevard, Chicago, its exclusive representative in Chicago territory.

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International Derrick & Equipment Co., Columbus, O., has removed its sales office, Boykin division, at Houston, Tex., from the West building to the main office and plant, 5453 Polk street.

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Racine Tool & Machine Co., 1760 State street, Racine, Wis., has changed its capitalization from $25,000 to 7500 common shares without par value, and increased the number of directors from three to five.

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Champion Dish Washing Machine Co., Hoboken, N. J., has leased the building formerly occupied by the Modern Tool Co., State street, Erie, Pa., and will remodel the plant prior to beginning production of washers.

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Fiege Co., Green Bay, Wis., has been organized by H. C. Fiege to manufacture cable and wire rope fittings which he has recently developed along new lines. Office and laboratory have been established on the grounds of the Green Bay Drop Forge Co., which will do the manufacturing for the present.

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Welchans Elevator Works Inc., Lancaster, Pa., is the new name adopted by the former A. C. Welchans Elevator Works. No change has been made in management or personnel.

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C. F. Laganke & Co. Inc., Cleveland, manufacturer of jigs, fixtures and special machinery, has moved its plant from 118 St. Clair avenue to 6545 Carnegie avenue. Double former floor space is available and additional equipment has been installed.

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Newbury Mfg. Co., Monroe, N. Y., has acquired the plant formerly operated by the J. & B. Foundry Co. Inc., Talladega, Ala., and plans to transfer all its activities there. The company manufactures gray iron pipe fittings and has conducted a business in Monroe for the past 30 years.

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Alco Valve Co., Inc., St. Louis, manufacturer of automatic control valves, has occupied its new plant at 2628 Big Bend boulevard. Increased capital, additional machinery and equipment and additions to personnel mark an expansion program now under way.

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M. S. Wright Co., Worcester, Mass., maker of vacuum sweepers, will be taken over by a new corporation. The company is now in the hands of Dwight C. Daniels and Taylor P. Calhoun, receivers. Mr. Daniels and Mr. Calhoun will direct the new company, which has a capital of $120,000. Incorporators are: Mr. Calhoun, Robert C. Olson and William J. O'Connor, all of Worcester.

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Midland Furnace Co., Columbus, O., has taken over the business of the Success Heater Mfg. Co., Des Moines, Iowa. This will double the production of the Columbus company and operations will be concentrated there. The Des Moines branch will be retained as a sales office. W. S. Michael is president, William Gunton vice president in charge of sales at Des Moines, C. O. Nordland, secretary and treasurer.

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Illinois Testing Laboratories Inc., 141 West Austin avenue, Chicago, has appointed James H. Knapp Co., 4920 Loma Vista avenue, Los Angeles, with a branch in San Francisco, its exclusive Pacific coast distributor. Its line includes portable and stationary indicating pyrometers, resistance thermometers and other electric and magnetic measuring instruments.

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Leland Electric Co., Dayton, O., manufacturer of fractional horsepower electric motors, automatic sign flashing equipment, and mercury switches, has formed a Canadian branch under the name of the Leland Electric of Canada Ltd. and established a plant on Duke street, Toronto, Ont. D. M. Fraser will be president. The new company will take over some of the export business of the parent company.

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Loring Coes Inc., Worcester, Mass., manufacturer of machine knives, has been reorganized as the Loring Coes Co. with the retirement of Frank L. Coes as president and treasurer. Capital stock is $75,000. New officers are: President, Fred S. Brigham; vice president, Frederick Searle; treasurer, James H. Colton; secretary, Loring Coes. The business was established 42 years ago as a branch of the Coes Wrench Co., which was sold in 1928.

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Thermoid Co., New York, has acquired control of the Woven Steel Hose & Rubber Co., Trenton, N. J. Robert J. Stokes, president of the Thermoid Co., announces the company has orders for molded hose that will double production at the Trenton plant for at least three months. Horace B. Tobin will be president of the Woven Steel company; Robert J. Stokes, vice president; and Joseph O. Baur, secretary and treasurer. These officers also will constitute the board of directors.

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Geometric Tool Co., New Haven, Conn., has appointed C. W. Marwedel, San Francisco, its exclusive representative in northern California. He has offices at 76 First street, San Francisco, and Eleventh and Alice streets, Oakland, Calif. Stock of tools and chasers will be carried at the Oakland office. Tool Equipment Co., formerly representing this line in Pacific and Rocky Mountain states, will continue its representation in Southern California, Idaho, Utah, Arizona, Montana, Wyoming, Colorado and New Mexico.

Steel Index Is Ready

The index to Volume 87 of STEEL, *for the last six months of* 1930, *now is ready for distribution. Copies will be sent to all subscribers requesting them.*

Wesley Bowman Studio

Steel Angles from Chicago

CHICAGO

MIDWINTER brings scarcely a ray of hope to western car equipment shops, and huge capacity for turning out freight and passenger rolling stock seems destined to many weeks' quiet.

Railroads are placing a little more than 60 per cent of normal trackage steel, and virtually nothing in new carrying equipment. Car builders sense they probably will be the last industry to revive.

Even should moderate car orders appear, the assembly period of 60 days for steel and other material, and the reorganization of limited working forces would mean long delays.

Merely skeleton staffs, with foremen, designers and engineers, are kept working by most western shops on scattered work now available.

Car shop and railway equipment foundries now are making up some castings, and several of the shops are turning out parts for repair stock.

Car Builders Serene After Seven Fairly Good Years

Western railroads are speeding up their rolling stock repair programs and going ahead with other activities.

Chicago & North Western railroad now has 7000 men in its western shops on a part-time basis. The Monon has 800 employed, while Illinois Central has 1000 to 1500 back at work in its shops here and in Iowa. Santa Fe and Rock Island also are opening their shops on a limited basis, and Milwaukee road is operating its shops about three days a week. Missouri Pacific has reopened its shops at Little Rock, Ark., with 1000 men.

Great Northern and Northern Pacific railroads have called back 4000 shop employes in St. Paul, following a shutdown of two weeks. Big Four railroad has reopened its Indianapolis shops with 2000 men on a 5-day basis.

Pullman has about 1000 cars on order at its Michigan City works, including its share of the Chicago Great Western 800-car order now on the assembly floors and being delivered, and some of the Santa Fe's 1500.

Work barely has started on the Santa Fe order, however. Material has been assembled for production next month and in March, with deliveries scheduled early in April.

Accustomed to the ups and downs of railroad purchases, car builders are relatively undisturbed, having had seven years of plenty, or near plenty.

The banner car building year of 1923 has been followed by three fairly full years, as modern equipment buying seasons go, a lean year in 1928, another satisfactory year in 1929, followed by fair orders in 1930.

Light Loadings Reduce Need for New Freight Cars

Averages of six leading western carriers show revenue freight loadings of all products 13 per cent under the first month of 1930. Iron and steel loadings are about 60 per cent of 1930.

Coal loadings are fair, grain is disappointing, and lumber products extremely light. Santa Fe's and Rock Island's wheat movements have shown gain recently. Refrigerator car products shipments from the coast have been picking up.

For the last six months western carriers have been speeding the return of foreign roads' cars in their possession to the home tracks to reduce demurrage, and in the hope of relieving the congestion of empties on switch tracks and in yards.

All western roads report surplus cars. Santa Fe has a surplus of every type, but is having 1500 cars built, largely for next year's grain movement. St. Paul has at hand approximately 20 per cent out of 19,000 surplus cars, with 2 per cent bad order cars, and plenty of equipment in view of 3000 bought last year.

Chicago Great Western is receiving delivery of 800 new freight cars and 36 locomotives, while carloadings are down 12 to 15 per cent from last year. Chicago & North Western feels no need for new equipment this year.

Burlington has plenty of cars to meet 1931 needs in view of last year's purchases, also much surplus equipment. Rock Island has large surplus of equipment stored, including 200 locomotives, and does not plan now to buy equipment, as purchases of the last two years have not been kept entirely busy.

Illinois Central has about 21,000 surplus freight cars, but may buy more this year. Soo line has surplus cars, undecided about this year. Wabash has much motive power and rolling equipment available. Big Four reports percentage of bad order cars awaiting repairs is low—3.2 per cent heavy repairs, and 1.5 per cent light.

Missouri Pacific has 8677 surplus cars. Northern Pacific is rebuilding 3000 cars in own shops. Chicago, Indianapolis & Louisville has ample surplus cars. Pere Marquette is fully equipped for the present.

Western Roads Fared Better Than Eastern and Southern

Despite the railroad gloom, western carriers have made a slightly better showing in a poor freight loading year than either the eastern or southern districts. Some views are that the emphasis placed upon the menace of rate reductions, increasing taxation, highway and pipe line competition by the roads themselves has resulted in rather widespread public over-estimation of the troubles besetting the carriers in general.

The progressive improvements in operating conditions, and the econ-

(*Concluded on Page* 66)

EDITORIAL

Look Before You Leap Into Alloy Steel Field

THAT well known saying that the grass is always greener on the other side of the fence has its application in industry. The history of American manufacturing abounds with evidence that the officers of industrial companies often regard new and untried fields as more promising than the ones in which they are feeding. The temptation to explore fresh green pastures sometimes is so strong that caution is thrown to the winds.

This was true when the automobile came into prominence. Hundreds of companies dived into the production of motor cars without first investigating the market or ascertaining their fitness to enter that highly competitive business. That many of them were unsuccessful is proved by the fact that only a few of the original builders have remained in the industry.

The same thing was true of radio manufacturing. When it appeared that the public wanted radio equipment, thousands of small electrical companies rushed into the field, many of them with no exact knowledge of what was involved in the way of financing, manufacturing or merchandising experience. Here again the mortality was excessive.

New Markets, However Attractive, Merit Thorough Investigation and Analysis

Numerous other illustrations could be cited. The significant point is that the attraction of a promising new market sometimes is so potent that hard headed business men will discard the wisdom born of long experience to enter a new field without first investigating it thoroughly.

Unfortunately there is a tendency in the steel industry, which if continued without abatement, may lead to repetition of the mistakes referred to in the foregoing paragraphs. So much has been written of the opportunities for alloy steels that scores of producers of rolled and cast steel are being tempted to enter the new field. The urge is especially strong because the markets for ordinary steel products are dull, prices are depressed, and competition is keen. On the other hand, alloy steels fall into the class of specialties, which upon superficial examination do not seem to be subject to the keen price competition existing in the carbon steel markets.

Those who have been engaged in producing alloy steels for a number of years know from hard experience that for every advantage which the alloy industry may have over the ordinary steel industry, there is a compensating disadvantage. The price of the product may seem high in proportion to the cost of materials, but against this are the factors of spoilage and rejections, to say nothing of the high cost of pioneering.

Many of the most promising applications of alloy steels are in industries in which manufacturers of ordinary steel products have had little or no sales experience. It is a costly procedure to develop markets in a new field.

How About Merchandising, Scope of Market, Competition, Resources?

Producers who are contemplating the alloy steel business with covetous eyes will do well to look sharply before they leap. Do the markets for the alloy or alloys in which you are interested parallel the markets for your present products, or will you be obliged to engage in developing a merchandising program in strange territory? Are your present resources—capital, equipment and personnel—adapted to and capable of handling the new problems involved? Will the addition of an alloy steel department interfere with efficiency in the conduct of your present business? Is the branch of alloy steel production in which you are planning to enter comparatively free from competition, or is it already overcrowded? If not overcrowded now, will it be two or three years from now when your pioneering effort will begin to bear fruit?

These are a few of the questions that should be answered to your complete satisfaction before you leap into the alloy steel field. Occasionally a company—acting on a hunch in entering a new line of business—is lucky enough to land on its feet. But to every one who is successful in guessing right, there are dozens who guess wrong.

The executives of many leading corporations can testify to the wisdom of this advice. One producer, with years of valuable experience in the manufacture of alloy steels, ordered a comprehensive study involving scores of investigators and the expenditure of thousands of dollars before entering a new alloy field. The officers of this concern found that the information gained by this painstaking survey was invaluable in preventing costly mistakes that would have been made had the company plunged headlong into the new line of business without first investigating it.

A Message from England To American Business Men

BY HERBERT N. CASSON
Editor, The Efficiency Magazine, London

YOU are depressed. You think you are crippled. You are afraid of the future. You are full of fears.

You have half the gold of the world and half of the machinery and most of the automobiles and all the skyscrapers.

You have the greatest home market in the world and the largest corporations that the world has ever seen.

You are ruled more by ideas and less by tradition than any other people in the world. You have usually done what you thought you could do.

HOW can it be possible that a progressive nation of 120,000,000 people can be wrecked by the speculations of a little handful of fools in Wall Street?

The prices that were forced too high had to come down. Today all the prices are too low.

There is now a golden opportunity for every man who has eyes to see it.

Dollars are now being sold for thirty cents. Practically every security in the United States is now being sold at less than its value.

The way to create a fortune is to buy from pessimists. Pay your money and take the risk.

Frick started his career by buying coke ovens in the slump of 1873. Carnegie made $300,000,000 by buying steel plants in slumps.

HUNDREDS of fortunes have been made by buying from pessimists. Ye Gods! What a chance there is at this moment!

In five years from now most American business men will belong to the "I-Wish-I-Had Club."

Then it will be too late to buy a dollar for thirty cents. The opportunity will be gone.

When a horse balks the balk is in his head, not in his legs. He moves on when he thinks he will.

And when an American business man is depressed the slump is in his head. There is nothing serious to prevent him from making money if he thinks he will.

WHEN Fear rules the will nothing can be done, but when a man casts Fear out of his mind the world becomes his oyster.

This silly depression has gone on long enough. Get rid of it. It is inside of you. RISE AND WALK.

THE BUSINESS TREND

Industrial Activity Continues Upward Trend

BUSINESS still is proceeding cautiously. Gains during the past week were less impressive than those of the preceding week, but the trend is unmistakably upward.

Industrial activity has expanded gradually from the year-end low point, but in spite of this climb it is far below the corresponding levels in January a year ago. Freight car loadings for the week ending Jan. 10 registered a gain of nearly 100,000 cars, yet the total is 17 per cent below the corresponding loadings in 1930.

Steelworks operations continue to gain slightly, but recessions in certain districts tend to show that the present demand is not as steady as it might be. After gains for four consecutive weeks, steelworks operations in the week ending Jan. 24 were at about 47 per cent of capacity. Present indications are that a further advance of one or two per cent in the final week of January may be expected.

In the automobile industry the rate of increasing activity is diminishing. All but two of the leading manufacturers now are in regular production. Chevrolet is on a 15,000-car week basis and Ford is on a 16,250-car week schedule. Total production last week was about 48,000 units. While this rate is substantially higher than those of any week for several months, it is far from reassuring. The industry still is waiting for the verdict of the shows, which will give manufacturers a hint of the public's attitude toward the new models and the unprecedented low prices.

Coal output is increasing seasonably, but production is about 15 per cent below corresponding figures for 1930.

New Orders for Equipment Show Improvement in December

Equipment orders, as revealed by December statistics released recently, are pointing upward. New orders for foundry equipment increased by a good margin, but unfilled orders were at a low level. Machine tool orders were up in December, but not enough to prevent the 3-month moving average from dipping down-

The Barometer of Business

Industrial Indicators

	December 1930	November 1930	December 1929
Pig iron output (Daily average, tons)	53,730	62,182	91,513
Machine Tool Index	73.1	95.5	222.1
Unfilled orders (tons)	3,943,596	3,639,636	4,417,193
Ingot output (Daily average, tons)	77,222	89,379	116,120
Dodge Bldg. awards in 37 states (sq. ft.)	29,054,600	33,098,600	44,000,000
Automobile output	155,100*	134,844	125,502
Coal output, tons	39,716,000	38,122,000	47,046,000
Business failures; number	2,525	2,031	2,037
Business failures; liabilities	$83,683,361	$55,260,730	$53,877,145
Cement production, Bbls.	8,480,000	11,098,000	11,215,000
Cotton consumption, bales	406,207	414,887	452,685
Car loadings (weekly average)	695,961	825,427	668,182

*Estimated.

Commodity Prices

	December 1930	November 1930	November 1929	Monthly average 1913
STEEL's composite average of 14 iron and steel prices	$31.74	$31.92	$35.95	$26.32
Bradstreet's index	$9.51	$9.84	$11.68	100
Wheat, cash (bushel)	$0.99	$0.97	$1.08	92c
Corn, cash (bushel)	$0.88	$0.90	$0.78	51c
Petroleum, crude (Bbl.)	$0.92	$0.92	$1.30	$2.50

Financial Indicators

	December 1930	November 1930	December 1929
25 Industrial stocks	$210.85	$228.21	$284.55
25 Rail stocks	$81.27	$91.12	$126.24
40 Bonds	$82.32	$84.65	$86.71
Bank clearings (000 omitted)	$41,871,884	$34,756,941	$51,715,639
Commercial paper rate N. Y., (per cent)	2¾	3	5¼
*Commercial loans (000 omitted)	8,449,000	8,774,000	9,649,000
Federal Reserve ratio, per cent	73.7	81.7	71.5
Railroad earnings**	$62,069,000	$112,251,002	$86,600,000
Stock sales, N. Y. stock exchange	58,764,602	51,949,840	83,861,600
Bond sales, par value	$265,550,800	$187,205,700	$277,086,850

*Leading member banks Federal Reserve System.
**November, October and November, respectively.

Foreign Trade

	December 1930	November 1930	December 1929
Exports	$273,000,000	$289,000,000	$426,000,000
Imports	$209,000,000	$204,700,000	$311,000,000
Gold exports	$36,000	$5,008,000	$72,547,000
Gold imports	$32,778,000	$40,159,000	$8,121,000

Foreign Exchange

	Normal	December 1930	November 1930	December 1929
Sterling	$4.867	$4.855	$4.86	$4.875
Francs	3.918c	3.93c	3.93c	3.94c
Lira	5.260c	5.235c	5.23c	5.235c
Marks	23.830c	23.82c	23.82c	23.93c

ward to 73.1. This figure compares with an index of 222.1 for December, 1929, which shows the relatively low status of machine tool demand at present.

The continued low volume of foreign trade, particularly exports of merchandise from the United States, indicates the extent of the depression abroad. In fact the decline of purchasing power in countries where American manufacturers have enjoyed a good volume of trade makes it difficult to determine whether or not the new tariff has been an important factor. Exports in 1930 totaled $3,841,207,000, as compared with $5,240,995,000 in 1929.

Uncertainty Hovers Over Prices; STEEL'S Composite Holds

Prices have not changed from their downward course. Wholesale commodity prices, as reflected by numerous barometers, are down slightly from the previous week. In the meantime, STEEL'S composite of 14 steel and iron prices has remained stationary at $31.73 for two weeks, after gaining 7 cents from the year-end low point of $31.66. Owing to the fact that the quotations of finished rolled steel prices are not being seriously tested at the present time, it is difficult to determine the outlook for the next few months. In the meantime the uncertainty caused by lack of an ability to test prices will be a troublesome factor.

The old cry that retail prices are too high in comparison with wholesale prices is being heard again. A number of authorities are reiterating their claims that retail prices must come down before the entire price structure attains the economic balance which is necessary before sound advances can be expected.

Money rates still are low and the tendency continues downward. The amount of new financing was decidedly higher in December than in November, but was far below the figures for December, 1929 and 1928, when rates were higher.

Average prices of stocks and bonds during the past week reflect a greater measure of irregularity than in the previous two weeks. Railroad stocks and bonds showed trivial gains in strength, but industrials were off slightly. Trading in both stocks and bonds was in reduced volume during the week.

The broad picture of business is indistinct. Uncertainty rules in many factors and until trends become more definite, it will be difficult to determine the probable rate of the recovery of business from its present sickness.

What Is «Normal» for American Business?

IN PRESENTING the statistical picture of 1930 in *The Yearbook of Industry,* Jan. 1 issue of STEEL, the record of the year was compared with that of the average for 10 years—1920-1929 inclusive. This procedure was followed because the editors felt that it was unfair to contrast 1930 with its predecessor—a record year.

This brings up the question, "What is a normal year?" The following discussion, reprinted from an article entitled "The Year 1930 in American Business" in the Jan. 20, 1931, issue of *The Conference Board Bulletin** is timely, inasmuch as complete figures for 1930 will be available soon and comparisons then will be in order:

"Whatever the shortcomings of the year 1930, there can be no question that they have been exaggerated in the public mind by the unfortunate comparison with the preceding year. Except in its final months, the year 1929 was one of abnormal and feverish activity. The lassitude of 1930 was constantly enhanced in public estimation by comparison with the high blood pressure of 1929.

Basis of Comparison Should Be Easily Understood

"It is generally recognized that in measuring the ups and downs of the business movement the proper comparison is with normal conditions. Unfortunately, few know what are normal conditions. Normal can be given numerical measurement only by complicated mathematical processes, which, however ingenious, are not convincing to the ordinary man unskilled in mathematical refinements. He receives with a certain skepticism any definite statement that business in general or some particular feature is so many per cent above or below normal. He prefers his comparisons on a definite base that he can understand. If he realizes that comparisons of 1930 with 1929 are faulty, he feels that he can make allowance for it."

At this point, the article in the *Bulletin* explains that comparisons of 1930 are made with 1929 and with the average of the five years 1925 to 1929. This procedure is somewhat in accord with STEEL'S policy in the Jan. 1 issue of comparing 1930 figures with those of 1929 and with the average of 1920 to 1929. In both cases, however, it is not to be understood that

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the averages are to be taken as a normal. Continuing, the discussion in the *Bulletin* reads:

"In many features of business activity, the passing of a number of years would in itself introduce some changes. In this interval population grows, and with it would presumably grow the national wealth and the national income. Generally speaking, an orderly growth of business activities would result in 1930 in higher indications of activity than in the average of the years 1925 to 1929. Without attempting to express its amount in numerical terms, the normal for 1930 would show a moderate increase over the average for the period 1925-1929. Equality with the latter period would be an indication of failure to make the expected advance. If, as the figures show, business activity was at a lower point in 1930 than in the average of 1925 to 1929, it is clear that the failure of the year to make its expected contribution to business progress was in reality greater than the figures appear to indicate. This consideration is of course not applicable in equal degree to each and every measure of business activity, but it is always present and cannot be disregarded in arriving at a fair judgment."

Estimate First Quarter Car Needs

ACCORDING to the national forecast of the regional shippers' advisory boards covering quarterly freight car requirements for 29 principal commodities as furnished to the car service division of the American Railway association, the volume of revenue freight in the first quarter of 1931 will be 5.5 per cent less than in the first quarter of 1930. The actual loadings in the first quarter of last year and the estimated loadings for the current quarter are shown by product and by regional board territory in the accompanying tables.

The most favorable outlook is in the Pacific coast regional board territory (comprising California, Nevada, Arizona and part of New Mexico), the Atlantic states (New York, eastern Pennsylvania, New Jersey, Delaware, and eastern Maryland), Allegheny territory (comprising western Pennsylvania, western Maryland, and parts of Ohio and West Virginia) and the Southeast (comprising Virginia and everything south of it and east of the Mississippi river.)

Agricultural products, principally citrus fruits, account for much of the favorable showing in the Pacific and Southeast territories. In the Atlantic states territory an increase of 6.1 per cent in cars for coal and coke and an increase of 2.5 per cent in petroleum products are estimated. The other gains in this territory are largely in food products.

In the Allegheny territory, cars for coal and coke for first quarter are estimated at only 2 per cent less than in the corresponding quarter last year. Cars for iron and steel will be 7.7 per cent less, according to the estimate.

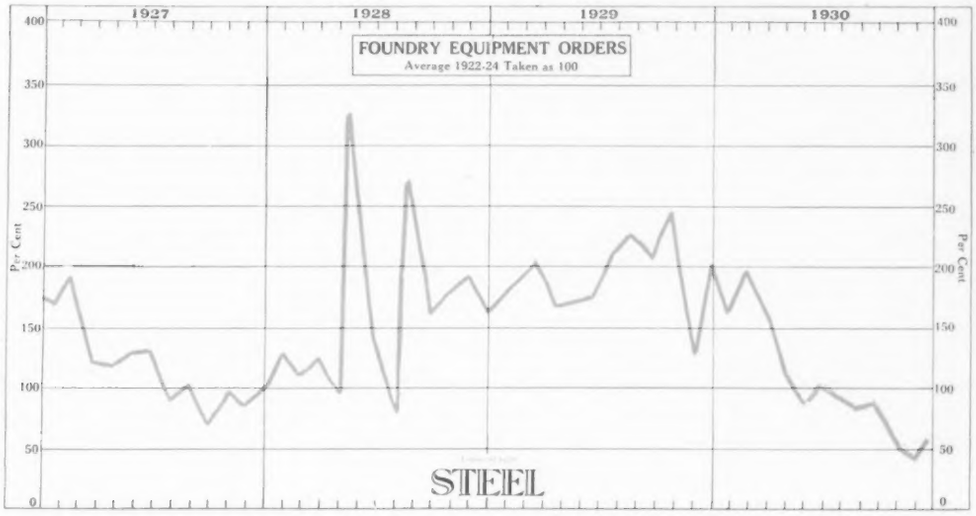
For the entire country a decrease in car requirements for coal and coke of only 3.8 per cent is expected; for ore, 14.4 per cent decrease; for iron and steel, 13.0 per cent decrease and for machinery and boilers, 20.9 per cent decrease.

First Quarter Car Requirements By Regional Territories

	Number of cars		—Per cent—	
	Actual 1930	Estimated 1931	Increase	Decrease
New England	169,768	156,930	.....	7.6
Atlantic states	755,558	747,198	.....	1.1
Allegheny	934,141	897,671	.....	3.9
Great Lakes	388,646	361,657	.....	6.9
Ohio valley	813,091	710,235	.....	12.6
Mid-west	1,165,355	1,092,794	.....	6.2
Northwest	240,039	231,069	.....	3.7
Trans-Missouri-Kansas	386,230	370,362	.....	4.1
Southeast	820,267	791,258	.....	3.5
Southwest	496,009	458,018	.....	7.7
Central West	295,005	284,020	.....	3.7
Pacific coast	263,089	273,043	3.8	.....
Pacific northwest	221,865	194,201	.....	12.5
Total	6,949,063	6,568,456	.....	5.5

First Quarter Car Requirements By Principal Commodities

Commodity	Actual 1930	Estimated 1931	Increase per cent	Decrease per cent
Grain	298,688	302,316	1.2	.....
Flour, meal and other mill products	244,824	242,076	.....	1.1
Hay, straw and alfalfa	79,197	76,722	.....	3.1
Cotton	51,134	48,000	.....	6.1
Cotton seed and products, except oil	52,777	51,270	.....	2.9
Citrus fruits	35,798	50,312	40.5	.....
Other fresh fruits	41,703	46,085	10.5	.....
Potatoes	65,664	62,380	.....	5.0
Other fresh vegetables	67,164	68,572	2.1	.....
Live stock	310,818	295,691	.....	4.9
Poultry and dairy products	33,763	32,811	.....	2.8
Coal and coke	2,473,227	2,379,632	.....	3.8
Ore and concentrates	120,359	103,021	.....	14.4
Gravel, sand and stone	359,354	342,065	.....	4.8
Salt	30,182	28,399	.....	5.9
Lumber and forest products	768,825	664,774	.....	13.5
Petroleum and petroleum products	553,425	551,055	.....	.4
Sugar, syrup and molasses	42,436	42,013	.....	1.0
Iron and steel	463,926	403,739	.....	13.0
Machinery and boilers	50,186	39,714	.....	20.9
Cement	95,459	88,678	.....	7.1
Brick and clay products	108,377	99,038	.....	8.6
Lime and plaster	43,200	39,967	.....	7.5
Agricultural implements and vehicles, other than automobiles	38,563	30,583	.....	20.7
Automobiles, trucks and parts	185,753	160,805	.....	13.4
Fertilizers, all kinds	106,483	153,967	.....	7.5
Paper, paper board and prepared roofing	92,829	90,220	.....	2.8
Chemicals and explosives	28,589	27,700	.....	3.1
Canned goods	46,360	46,851	1.1	.....
Total all commodities listed	6,949,063	6,568,456	.....	5.5



Per Cent

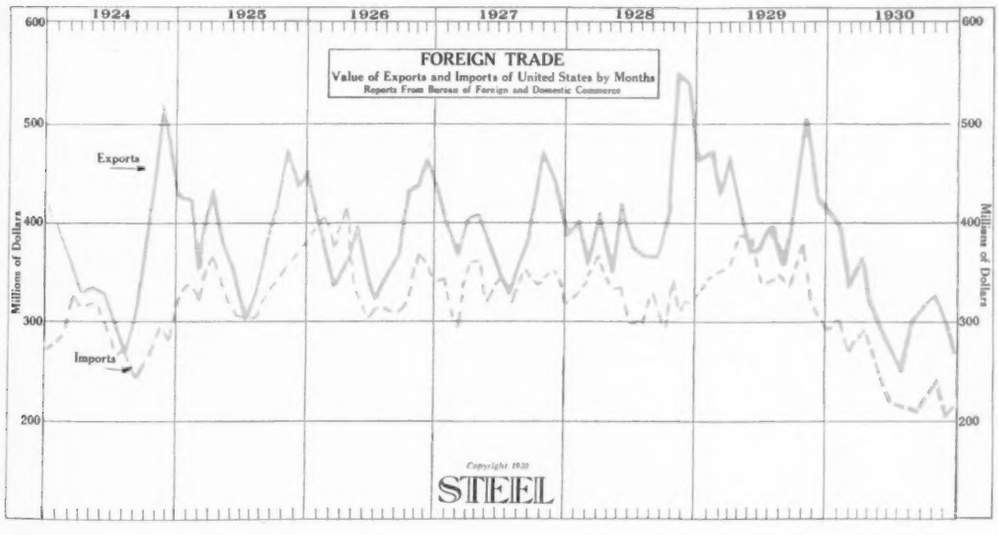
	1930	1929
December	59.8	208.0
November	45.3	128.6
October	50.0	245.3
September	91.0	216.3
August	85.2	229.5
July	90.6	219.3

New Foundry Equipment Sales Improve, Unfilled Orders Slump

An encouraging increase in activity among foundry equipment makers during December was somewhat clouded by the fact that shipments increased to the point of bringing unfilled orders to the lowest level in years. The Foundry Equipment Manufacturers' association sets its index of new orders at 59.8 for December as compared with 45.3 in November. The recovery is the best for any single month since last February, and brings the volume of new orders to the best position in three months. Orders in December, 1929, were at 208. Shipments in December, 1930, were the heaviest since last July, and forced the index of incompleted orders to 82.3, against 124.9 in November and 473.2 in December, 1929.

Foreign Trade Continues Decline In December

American foreign trade, sharply curtailed throughout the course of the past year, finished 1930 without signs of recovery. Exports in December fell to $273,000,000, from $289,000,000 in the previous month, and imports did little more than to hold their own at $209,000,000. Comparisons of 1929 and 1930 totals show that exports dropped from $5,240,995,000 to $3,841,-207,000 and imports fell from $4,399,361,000 to $3,601,369,000. During the full year of 1930 exports exceeded imports by $779,838,000, as compared with an excess of $841,634,000 in 1929. Exports suffered a greater decline than imports, losses amounting to a little more than one-fourth and a little less than one-fifth, respectively. Trade balance fell 7.34 per cent.

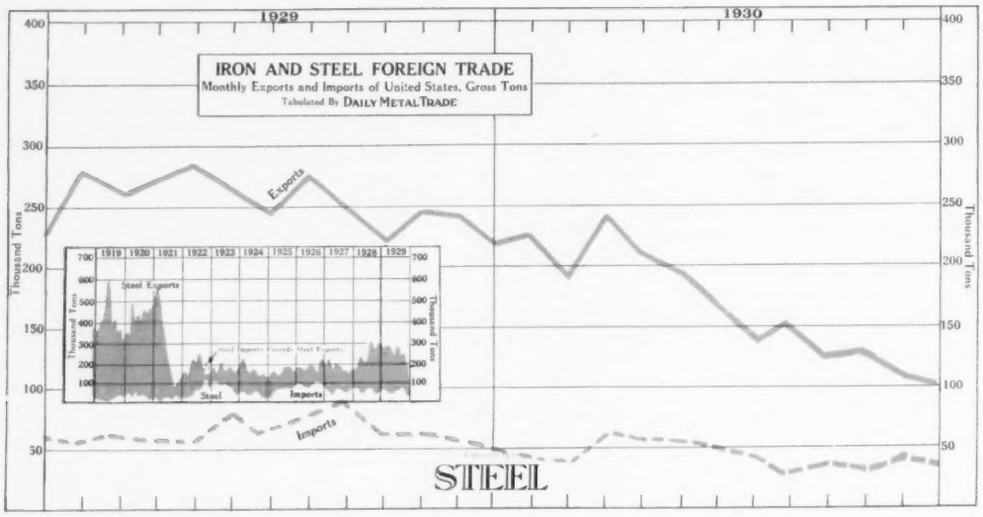


EXPORTS

December, 1930	$273,000,000
November, 1930	289,000,000
December, 1929	426,551,000

IMPORTS

December, 1930	$209,000,000
November, 1930	204,700,000
December, 1929	309,809,000



Exports

	Tons
Dec., 1930	101,988
Nov., 1930	111,968
Dec., 1929	215,242

Imports

Dec., 1930	40,754
Nov., 1930	43,095
Dec., 1929	47,486

December Iron and Steel Exports Touch New Low

Establishing another new low for the year, exports of iron and steel fell to 101,988 in December, and were accompanied by a decrease in imports to 40,754 tons. Neither of the recessions was very great compared with the previous month, but the general level itself was already low. Estimates for the entire year of 1930 indicate that about 1,985,025 tons of exports were handled and 538,089 tons of imports were received. Exports declined 34.7 per cent from the total of 3,032,352 tons in 1929 and imports shrank 28.6 per cent from 739,004 tons in 1929. Principal reductions during the year took place in the classifications of scrap, shapes, bars and plates.

Iron and Steel Price Composite Maintains Previous Advance

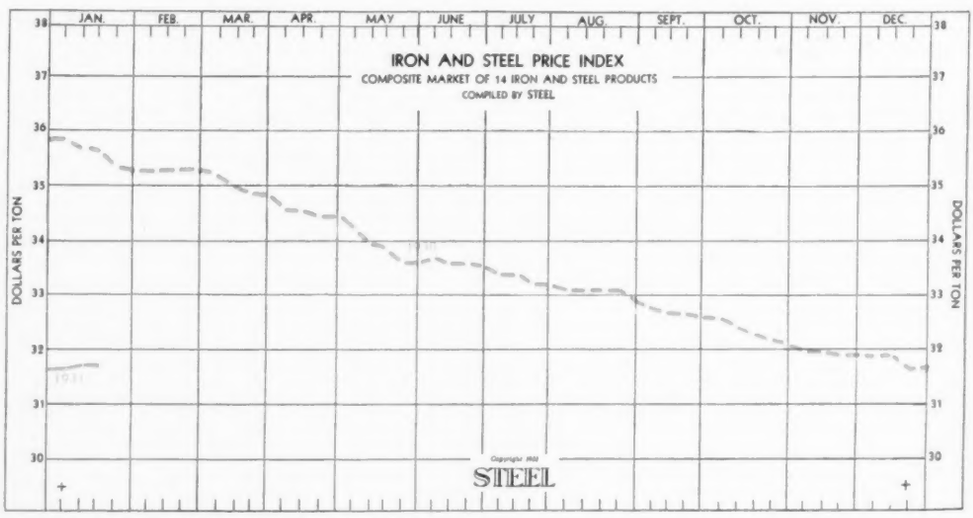
The rise established on Jan. 14 in Steel's composite of steel and iron prices remained unchanged on Jan. 21 at $31.73. The price situation is somewhat complicated by the fact that a suitable test of many items is still to be brought about. Releases of orders for finished and semifinished goods early in January were made before a substantial price test could take place. As a result it is chiefly through supplemental buying or possibly second quarter needs, as they influence the market next month, that the trend will make itself really evident. It seems likely that such items as bars, plates and shapes will not bring about an immediate change in the composite.

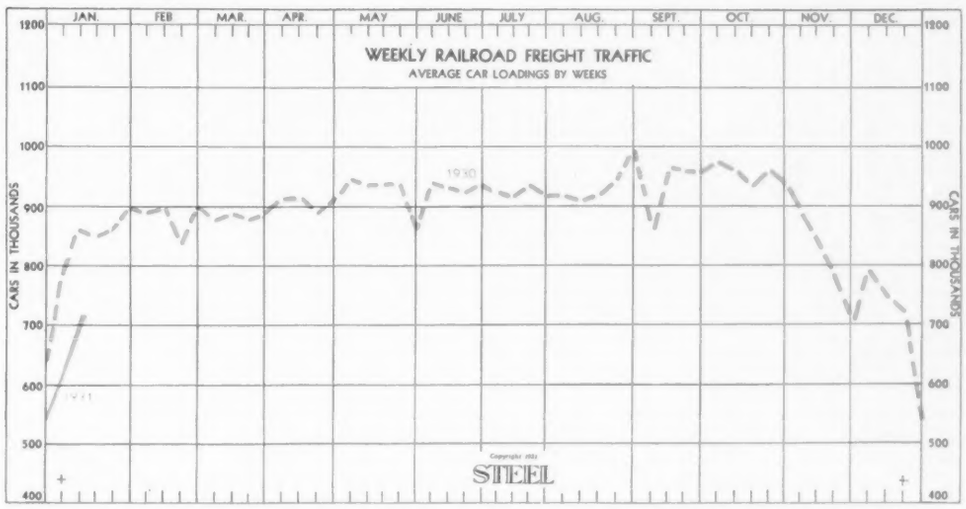
Weekly Figures

Jan. 21	$31.73
Jan. 14	31.73
Jan. 7	31.66
Dec. 31, 1930	31.66
Dec. 24	31.66
Dec. 17	31.68
Dec. 10	31.84
Dec. 3	31.84

Monthly Averages

December	$31.74
November	31.92
October	32.26
September	32.65





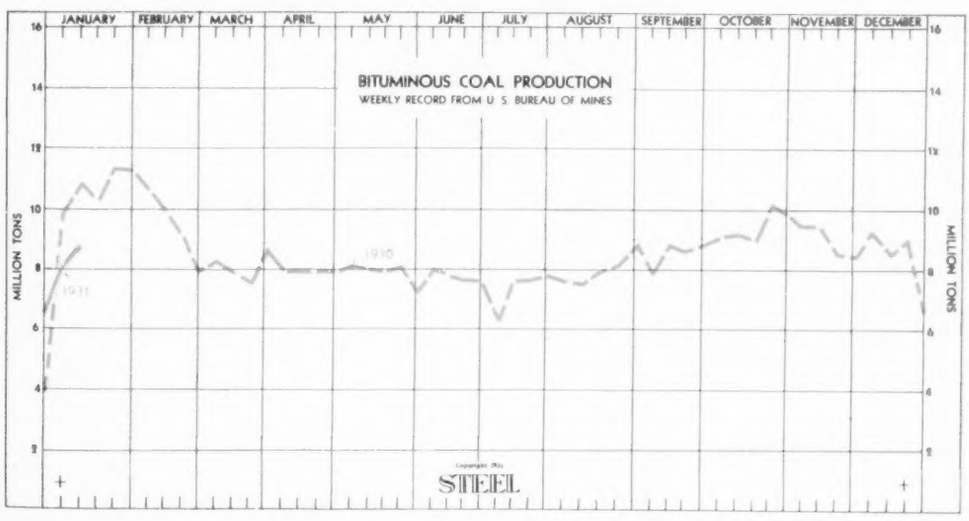
	1931	1930
Jan. 10	714,251	862,461
Jan. 3	615,382	775,745
	1930	**1929**
Dec. 27	538,419	639,389
Dec. 20	713,810	842,775

Car Loadings Recover Slowly From Holiday Rate

Little encouragement can be derived from the seasonal increase in freight car loadings, as it is less than the usual upswing which follows holiday totals. Cars numbering 714,251 were loaded in the week ended Jan. 10, as compared with 615,382 in the previous week, which included New Year's day. The report for the week ended Jan. 17 will show more accurately the business trend as reflected in car loadings. In the corresponding week of 1930 loadings amounted to 862,461. The decline from the figures of last year is 148,210 and from 1929 is 200,187. Loadings for the present year to Jan. 10 were 1,329,633 cars, against 1,638,216 in 1930, a decline of about 23 per cent.

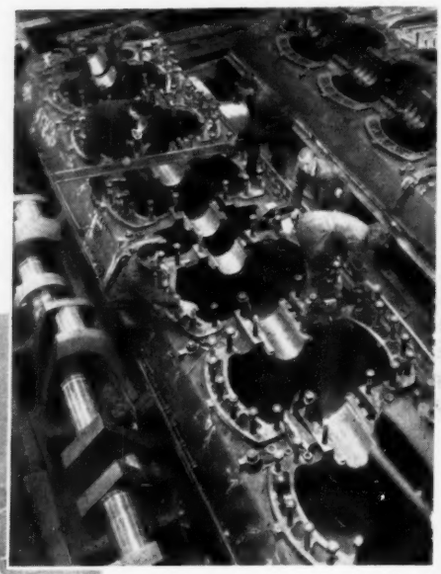
Output of Bituminous Coal Shows Normal Seasonal Increase

Soft coal output increased during the week ended Jan. 10 to 9,181,000 tons, establishing approximately a normal seasonal gain as compared with the reduced output of the previous week, when 8,367,000 tons were produced. However, the rate is considerably under that of a year ago, when 11,166,000 tons were produced. To date during the present coal year of 1930-1931 output has been 348,996,000 tons, the lowest for the period back to the coal year of 1921-1922. Total production of soft coal during the calendar year 1930, according to the preliminary estimate of the United States bureau of mines, was 461,630,000 net tons, a decrease from 1929 of 73,359,000 tons or 13.7 per cent.

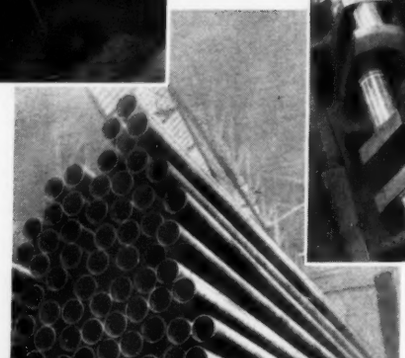


Thousands of Tons		
	1931	1930
Jan. 10	9,181	11,166
Jan. 3	8,369	10,190
	1930	**1929**
Dec. 27	6,892	7,816
Dec. 20	9,355	11,360
Dec. 13	8,784	11,805

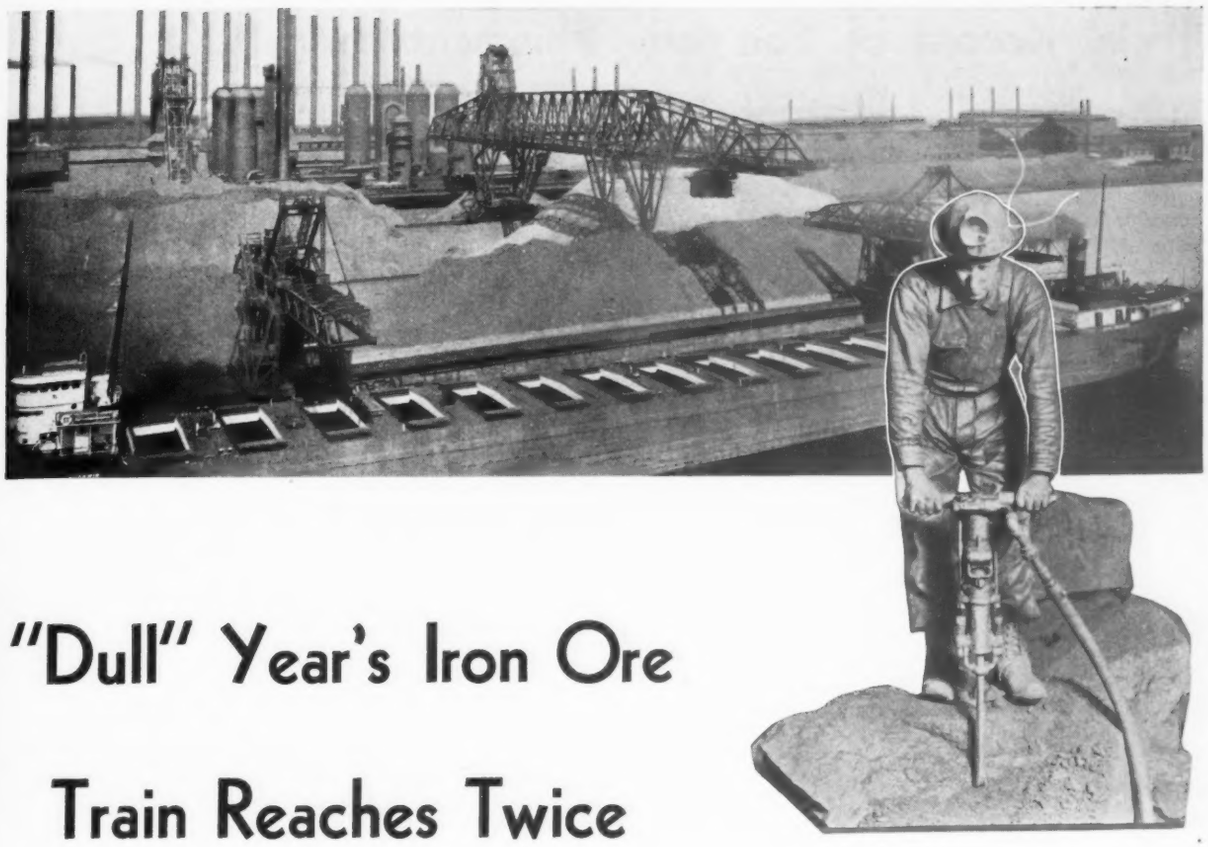
STEEL is the basis of the Russian soviet's five-year industrialization plan. While building blast furnaces, steel plants and finishing mills, the soviet is conducting a publicity campaign to let the Russian people know the progress of the plan. These views are from its publications.



PRODUCTION of pig iron at the rate of 17,000,000 tons a year by the end of 1933 is one aim of the Russian industrialization plan. The output in 1930 was approximately 4,600,000 tons. Russia was one of the few countries to increase its production over 1929.



THESE views show finished pipe in the Mannesmann department of one of the Russian mills; the yards of a soviet rail mill, and the assembly of a diesel engine. The size of the engine may be understood by comparison with the men working on it.



"Dull" Year's Iron Ore Train Reaches Twice Across Continent

BY A. J. HAIN
Associate Editor, Steel

IMAGINE an area of the earth one mile square. Elevate it all over its surface 29 feet. The raised portion of the earth represents the volume of iron ore shipped from the Lake superior district in 1930.

Put the iron ore in 600-foot boats, loading them nearly to capacity. Let them travel past you, touching end to end, and it will take more than 45 hours to see the parade.

Load the iron ore into railroad cars such as used to transport it from lower lake docks to furnaces. Make up a train of the 773,000 cars required, and it will stretch out 6153 miles, or more than twice the distance between New York and San Francisco.

In this way one may receive an impression of the tonnage of iron ore moved in 1930, a year when shipments were about 75 per cent of normal. Expressed in figures the amount was 47,187,661 gross tons.

This brought the total for all shipments from the Lake Superior district since the discovery of the ranges to 1,514,457,448 tons. Elevate that one mile area 868 feet all over its surface, a height about equivalent to a 72-story building, and you obtain an idea of the majestic proportions of man's work in the Lake Superior district in the past 50 years—the iron ore he has dug up and transported 1000 miles to furnaces. Slice off one-third of this brobdingnagian block, and that is the portion mined and shipped by the United States Steel Corp. since its formation.

Official reports on iron ore shipped by all the operating companies from the various mines in 1930 have just been compiled. In 1929 when shipments were near the peak eight operators accounted for 89 per cent of all the ore moved. In 1930 when shipments were comparatively low these operators increased their proportion to slightly more than 90 per cent. In a restricted market the small producer of commodities frequently has less chance to move his product than has his large competitor. But in the case of iron ore the 14 smaller producers have contracts with iron and steel works, and as shown by the contrasting conditions of the two years their de-

Official Record of Iron Ore Shipments from Lake Superior District in 1929 and 1930

Mesabi Range

	1929	1930
Adams-Spruce Group	2,163,210	1,510,170
Agnew		113,011
Ajax (stockpile)	11,252	
Albany	313,703	235,741
Alexandria	349,707	234,788
Ann		14,179
Arcturus	499,571	446,411
Bennett	738,943	512,340
Biwabik	330,363	276,921
Bruce	250,052	153,832
Burt-Pool-Day	475,813	200,667
Commodore	78,887	96,055
Corsica	403,381	181,127
Crescent (Trespass)	398	
Danube	302,621	289,192
Dean	578	
Drew		40,438
Duncan	5,071	5,073
Dunwoody	798,405	698,383
Elizabeth (Stockpile)	12,151	
Fayal	390,512	425,616
Genoa-Sparta	4,803	150,850
Glenn	293,610	
Godfrey	406,200	547,153
Halobe		136,182
Harold	211,418	168,324
Harrison	588,925	125,252
Harrison Annex	48,643	8,695
Hartley - Burt - Palmer	1,346,169	1,108,751
Hawkins	492,161	314,874
Helmer	18,616	
Hill Annex	1,813,341	1,000,089
Hill Trumbull	521,845	402,598
Hoadley (Crosby)	223,205	120,725
Hobart	55,449	
Holman-Brown		553,699
Hull-Rust	2,559,399	2,642,694
Kerr (Trespass)		508
Kevin	218,389	104,318
Kinney	201,776	90,079
Lamberton	77,158	
Langdon	49,334	58,768
La Rue	387,925	358,250
Laura	124,942	
Leonidas	1,176,272	1,186,316
Lincoln	253,487	185,538
Mace No. 2		117,948
Mahoning	4,040,845	1,817,707
Mahoning-Rust		147,342
Malta		27,096
Margaret	200,932	125,867
Mary Ellen	42,387	21,007
Mesabi Chief	248,766	470,928
Mesabi Sinter	11,041	
Midget		25,900
Minnewas		1,578,519
Missabe Mt.	6,252,250	2,943,016
Mississippi	189,797	80,975
Morris	1,245,764	911,204
Morrison	821,332	723,822
Morrow (new)	1,392	
Morrow Extension	21,111	
No. Harrison	259,700	462,910
No. Harrison Annex	1,328	2,208
North Star		119,349
Orwell	201,894	151,501
Patrick	254,370	351,614
Pettit	75,822	
Quinn	19,487	20,424
Ruddy	14,563	
Sargent	277,158	184,398
Sauntry-Alpena	148,343	
Scranton	607,235	465,207
Section 13-58-19	385	
Sellers	5,031,805	2,291,131
Shenango	740,838	439,459
Siphon (Spring)	50,101	
South Agnew	293,382	275,000
St. Paul	456,941	378,585
Susquehanna	606,124	403,835
Tyler	8,308	
Union	201,935	144,785
Uno North (G. N.)	134,469	27,644
Uno South (G. N.)	137,841	
Uno South (N. P.)	17,832	
Utica	260,756	265,245
Virginia	128,519	
Wabigon	398,800	96,557
Wacootah	362,155	394,227
Wade	160,066	99,408
Webb	435,569	387,014
Wellington	346,637	341,879
York	101,350	75,974
Total	43,007,015	31,067,292

Menominee Range

	1929	1930
Aragon	208,433	185,166
Balkan	53,258	41,437
Baltic	9,456	11,470
Bates	125,843	110,658
Bengal	241,790	41,633
Berkshire	215,635	146,477
Bristol (Claire)	563,260	174,296
Buck	105,485	76,343
Caspian	335,885	148,252
Chapin	432,265	415,817
Davidson Group	311,604	176,678
Ernst	9,627	
Florence	69,463	62,508
Fogarty	38,734	18,986
Forbes	161,569	91,221
Genesee	135,092	167,406
Hiawatha	208,944	151,589
Homer	176,749	136,866
James	302,289	176,847
Judson	162,999	103,725
Loretto	136,334	97,152
Odgers	30,441	16,719
Penn Mines	472,381	343,459
Riverton Group	240,375	161,076
Rogers	323,877	128,721
Tobin		19,598
Virgil	175,078	137,854
Warner	177,429	178,332
Wauseca	50,305	
West Chapin	21,282	26,031
Zimmerman	149,860	62,740
Total	5,645,742	3,609,052

Marquette Range

	1929	1930
Archibald	193,292	245,405
Athens	485,940	345,640
Austin	77,426	
Blueberry	42,741	172,552
Cambria	246,747	114,936
Cleveland-Cliffs Group	510,930	275,261
Francis	58,009	92,828
Gardiner-Mackinaw	95,397	60,384
Holmes	353,422	221,959
Imperial	102,850	68,976
Isabella	120,129	95,984
Lake Superior	298,240	212,898
Maas	479,812	253,852
Morris-Lloyd	638,234	299,791
Negaunee	637,946	417,376
Princeton	7,162	3,230
Republic	19,868	
Richmond (new)	164,503	126,543
Stephenson	99,318	68,353
Tilden	441,769	287,044
Volunteer	335,963	270,956
Total	5,409,698	3,633,968

Gogebic Range

	1929	1930
Anvil	77,307	77,963
Cary	278,129	192,686
Davis	24,323	25,417
Eureka-Asteroid	404,557	417,682
Geneva	32,245	498
Ironton	587,591	281,747
Keweenaw	140,748	48,085
Massie	84,044	
Meteor (Stockpile)	2,781	
Montreal	1,432,440	893,977
Newport	652,012	474,744
Norrie Group	1,272,244	834,576
Palms	178,145	94,970
Plymouth	505,513	404,292
Puritan	394,906	256,795
Sunday Lake	589,826	365,651
Tilden	54,686	54,126
Townsite	171,862	82,863
Wakefield	631,316	404,123
West Davis	109,206	153,436
Total	7,623,881	5,063,631

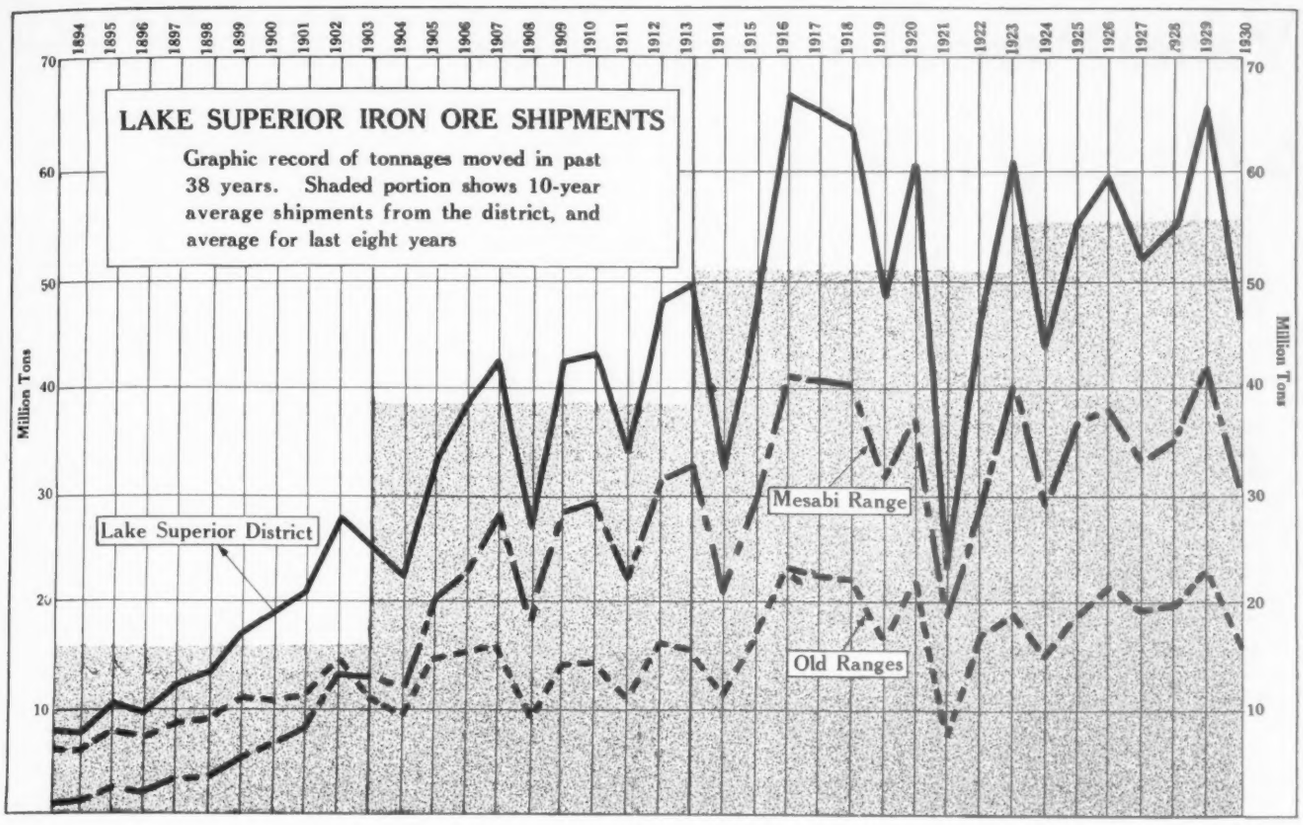
Cuyuna Range

	1929	1930
Armour No. 1	340,572	348,299
Armour No. 2	208,971	185,657
Croft	210,399	161,562
Evergreen	240,843	146,939
Feigh	46,843	17,722
Hillcrest	108,967	153,176
Huntington		6,590
Ironton	58,959	46,643
Louise	343,466	179,181
Mahnomen	319,397	193,879
Maroco	134,032	101,399
Martin		1,009
Merritt	7,605	2,662
Milford	218,928	98,209
Portsmouth		66,058
Sagamore	271,701	130,172
Wearne	93,070	90,032
Total	2,603,753	1,929,189

Vermillion Range

	1929	1930
Chandler	60,323	75,885
Pioneer	897,614	1,006,204
Sibley	406,294	384,547
Soudan	161,703	140,474
Zenith	347,614	277,419
Total	1,873,548	1,884,529

	1929	1930
GRAND TOTAL	66,163,637	47,187,661


LAKE SUPERIOR IRON ORE SHIPMENTS
Graphic record of tonnages moved in past 38 years. Shaded portion shows 10-year average shipments from the district, and average for last eight years
Million Tons
Lake Superior District
Mesabi Range
Old Ranges

mand varies practically in the same ratio as that of the others.

The ore moved from the Lake Superior district in 1930 was 18,975,976 tons less than in 1929, a reduction of 28 per cent. Compared with the annual average for the preceding ten years, however, the 1930 decrease was only 9 per cent.

The mines of record in the Lake Superior district, as having produced ore at one time or another since the opening of the ranges is 442. One hundred twenty-one of them have not been active in the past 20 years and may be considered extinct. One hundred forty-five have not shipped ore in the past ten years. The present potential shippers, eliminating stockpiles, probably do not exceed 250.

The Oliver Iron Mining Co., Steel corporation subsidiary, shipped 20,787,176 tons in 1930, or 44 per cent of the total. Its proportion in 1929 and 1928 was 42 per cent; in 1927, 41 per cent; and in 1926, 43 per cent. The second largest operator, Pickands, Mather & Co., in 1930 shipped 8,882,206 tons, not half the amount of the Steel corporation, though in 1929 it went over half. The eight leading operators combined moved 42,547,377 tons last year. All of the remaining 14 operators accounted for only 4,640,284 tons.

The Steel corporation shipped 14,266,801 tons, or 68 per cent of its own total, from eight mines, all of them in Minnesota. A million or more tons was taken from each of these eight, the Missabe Mountain continuing the most extensively operated property, with 2,943,016 tons to its credit for 1930. Only two other mines in the Lake Superior district shipped 1,000,000 or more tons last year; these were the Mahoning, operated by Pickands, Mather & Co., and the Hill Annex, Jones & Laughlin Steel Corp. The ten mines shipping 1,000,000 tons or more in 1930 are:

	Tons
Missabe Mountain	2,943,016
Hull-Rust	2,642,694
Sellers	2,291,131
Mahoning	1,817,707
Minnewas	1,578,519
Adams-Spruce	1,510,170
Leonidas	1,186,316
Hartley-Burt-Palmer	1,108,751
Pioneer	1,006,204
Hill Annex	1,000,089

These ten mines with a combined output of 17,084,597 tons shipped 36 per cent of the total from the Lake Superior district. All of the other 150 mines operated during the year accounted for the remaining 30,103,064 tons, an average of about 200,000 tons. In 1929 shipments were made from 172 mines, in comparison with 160 in 1930. The reduction in number of active properties was made almost entirely on the Mesabi range, with ten less last year than in the year preceding.

All of the large operators reduced shipments in 1930. One of the few of the smaller producers to increase theirs was the Ford Motor Co. It moved 241,528 tons, in contrast with 145,591 tons in 1929. The company operates two mines, the Imperial and the Blueberry, on the Marquette range. Shipments from the Blueberry, a mine developed by the Ford company, increased from 42,741 tons in 1929 to 172,552 tons in 1930. The recent purchase of 10,300 acres of iron ore lands on the Menominee range in

(*Concluded on Page* 53)

Chart Records All Iron Ore Shipments

STEEL'S complete chart of Lake Superior ore shipments from the opening of the various mines to date will be ready for distribution soon. STEEL'S predecessor, IRON TRADE REVIEW, began the compilation of individual mine shipping records many years ago, from official reports from mine owners and operators and railroads. Up until recently it was the sole agency for the compilation of such records, and practically all published records now in existence are based on the figures carefully collected year after year by IRON TRADE REVIEW. The new chart, including 1930 figures, is 28 x 30 inches, on heavy coated stock, suitable for framing. Many companies use a number of them in their operating, shipping and sales departments. The chart may be obtained by addressing STEEL, Penton building, Cleveland, and enclosing $2 per copy.

Varies Annealing Temperature by Induction Regulator

BY R. W. MILLER
Engineer, Arolsen, Germany

IMPORTANCE attached to the heat treatment of metals, particularly on the physical properties of iron, tool steels, glass, ceramic and enamel, has produced keen rivalry in perfecting equipment required for heat treatment. Efforts have been expended toward a practically uniform heating of all parts of the material, a reliable adjustment to the required temperature, and heating the material without oxidation of the surface.

Electric energy, generated in large quantities, is a source of heat suitable for this purpose. Tests have been made with resistance elements such as carbon in inert atmosphere, resistances of granular graphite, carborundum pressed into rods and silite resistances, but none was able to satisfy the high temperature required for industrial use, such as 1850 degrees Fahr. For a long time platinum was the only metallic resistance, which would withstand continuous temperatures up to 2200 degrees Fahr. The high price of this noble metal excluded any possibility of it being used for resistances in electric furnaces.

Exhaustive researches covering the durability of resistance material of widely differing properties, the most suitable arrangement of the heating resistances in the furnace itself and the thermal qualities of different parts of furnaces, have culminated in the design of electric annealing furnaces by Brown, Boveri & Co. Ltd., Baden, Switzerland.

Spiral Elements Used

The heating resistances in which the electric energy supplied to the furnace is converted into heat energy, are wired spirals of special material. The distribution of the heating resistance varies according to the process for which the furnace is used, the size of the furnace and the quantity of material handled. Furnaces with horizontal muffles are fitted with heating elements under the floor, on the side walls or on the crown of the furnace. To insure that the material under treatment is heated uniformly, the heating elements are fitted to two sides of the muffle, even with the smallest furnaces. For furnaces having larger output it is preferable to heat the material by elements mounted on three or four sides. Furnaces with vertical muffles are heated by spiral resistances mounted concentrically on special frames or imbedded in fire-proof material. The chief factor in the distribution of the heating element is that the heat generated in the metallic resistances shall be transmitted to the material to be treated by radiation in the most direct manner.

The framework for all annealing furnaces of smaller construction comprises rolled sections. Each member of the frame is welded electrically in position. The frame is equipped with lifting rings for removing the crown of the furnace and guide rails for the door are welded to the lower frame. The framework for the door also comprises electrically-welded, rolled sections. For small furnaces the door is guided between the rails by adjusting bolts and is counterweighted. Large doors carry two rollers at the sides and are opened and closed hydraulically.

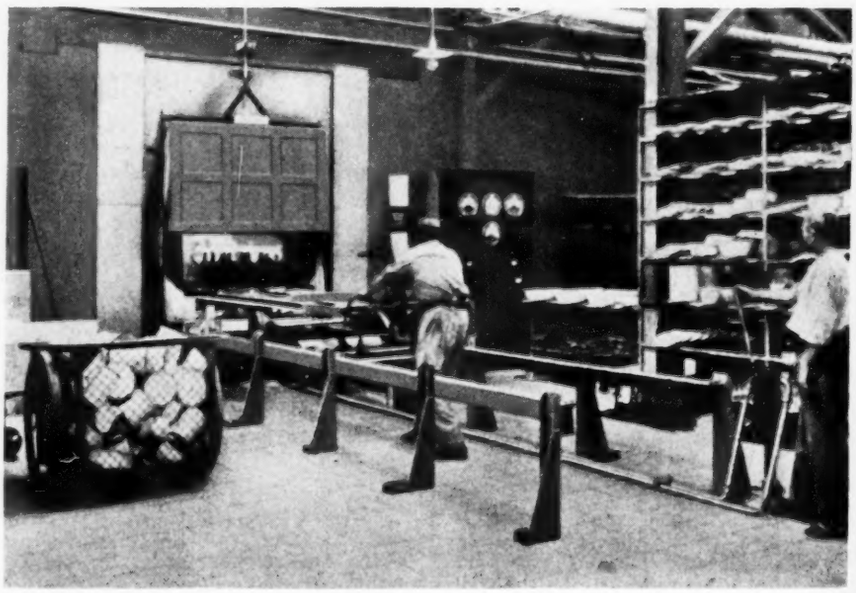
Muffle Shell Is Welded

The framework of annealing furnaces with a vertical muffle is a cylinder of steel sheets which is made gas-tight by welding. The upper edge of the casing is designed for a water seal. The fireclay lining and the insulation of the cover are fitted with a supporting ring and lifting eyes. An angle iron near the supporting ring and the channel above the furnace casing form part of the water seal. Furnaces for large metal sheets, billets, rods and tubes are secured by an anchoring frame built into the floor.

In determining the important components of a firebrick lining, special value is placed upon the retention of shape, good electrical insulating properties and high temperatures. To reduce the number of joints and increase the ease with which the furnace may be moved, individual bricks should be large and provided with grooved and tongued joints. The thickness of the inside fireproof layer depends upon the operating temperature of the furnace in question; a common value for this thickness is between 1.6 inches and 4 inches. The thickness of the insulating layer installed between the masonry and the framework of the furnace, is dependent upon the operating temperature.

How Leads Are Supported

The dimensions of the resistance wire are chosen with respect to the mechanical condition and the heating properties. The spirally-wound wire is supported on tubes which are mounted in rings and on forks made of heat-resisting material. All current leads to the resistances are provided with supporting rings. The lead-in bolts and carrying rings are cast from a metal which will not oxidize at temperatures below 2200 degrees Fahr. The lead-in bolts are electrically insulated from the framework and masonry by disks having good insulating properties, the iron framework is grounded so that no danger to the attendant exists and



Electric enameling furnace of foreign design showing charging device and hydraulically-operated charging door. Heat treating temperatures up to 1850 *degrees Fahr. are afforded with an input of* 100 *kilowatts*

the resistances are protected against excessive temperatures by a special device. In view of the use of correct dimensions and the protective device, the durability of the heating elements is almost unlimited. A special charging device has been designed for large furnaces and a special carriage for charging enameling furnaces with small ware.

In many furnaces the electric input is constant and the operating temperature is regulated by changing the quantity of material passed through the furnace in units of time. When the quantity of material varies, the temperature must be adjusted and it is not always easy to satisfy this requirement. The simplest method of regulating the input is by switching certain heating elements into circuit or cutting them out, as the case may be. This method, however, can be used only in furnaces where the heating resistances are divided into various groups. With this arrangement the uniformity of the heating is disturbed and is only suitable for rough adjustments. Regulation in steps one to three can be obtained in furnaces supplied with three-phase power by using star or delta connections on the heating element. This system of regulation has limited applications, but it has the advantage over the previous method in that with reduced heating, all elements remain notched in.

Voltage Stepped Down

Larger annealing furnaces can be connected to any available power up to 500 volts, but with small annealing furnaces this is not possible. Consideration of the mechanical durability of the heating resistances of such furnaces often entails the reduction of the voltage by means of a transformer. In such cases the transformer is provided with tappings and enables the working temperature in the furnace to be regulated as desired by switching over to the suitable voltage.

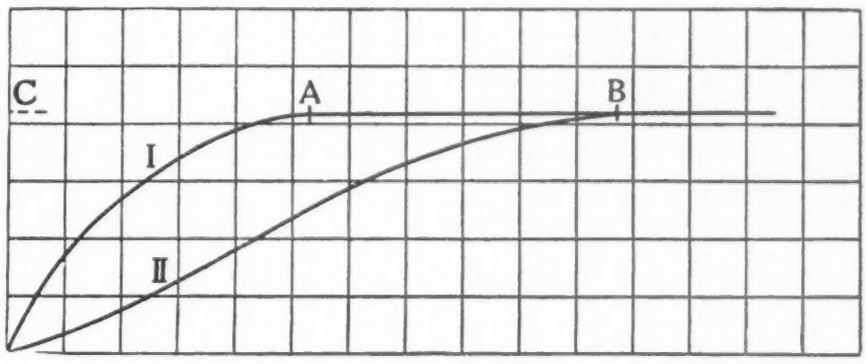
The most ideal regulation is obtained by the use of an induction regulator, which enables the voltage to be raised or lowered by 100 per cent from the voltage in the power line. The input to the resistance varies as the square of the voltage, hence, a large range in temperature is obtained. Every temperature change and any change of input can be adjusted immediately. With this system or regulation, changes in the heat treatment of the material can be handled. The method, therefore, is suitable for laboratory furnaces; furnaces with various operating conditions; and for annealing furnaces with which an exact adjustment to a constant temperature or a definite heating curve, dependent upon the initial temperature, must be considered. The temperature characteristic of a furnace provided with this method of regulation is a straight line, while other methods of regulation give temperatue curves which oscillate between the limiting values as the resistance are switched in and out.

For annealing large commodities, the duration of treatment and the distribution of the temperature in the material are directly dependent upon the quantity of heat supplied to the furnace. In the accompanying chart curve I shows the temperature characteristic for the surface of the charge, and curve II the characteristic for the middle of a large steel block as a function of time, on the assumption that the energy supplied up to the point is constant. The point, A, shows the highest advisable temperature for the material treated. After this point has been attained the heat energy supplied must be reduced to correspond to the smaller temperature drop of the heat energy flowing into the interior of the charge. With a constant surface temperature, the temperature of the interior of the charge increases until the point, B, or upper unit of temperature, is reached. From this point the heat energy supplied to the furnace must be reduced so that only the radiation losses are covered. With this input, known as the constant input, the furnace can remain for long periods at a constant temperature. A regulating device provides a short heating up time and serves to limit the temperature from exceeding that of the adjusted maximum.

The switch gear for each furnace comprises the necessary switching devices and measuring instruments. A motor switchbox with built-in fuses or tripping relay and built-on ammeter, constitutes the main switching device for small furnaces. For use with currents up to 100 amperes the motor switchboxes are constructed as rotary switches; lifting contacts are provided for currents over this value. The pyrometer is mounted on a special panel on the wall near the furnace. Large furnaces are provided with high-tension oil switches, mounted in a switchboard panel, which also can be used for housing the induction regulator for the star-delta switch. The front of the switch panel forms a switchboard.

Pyrometers are an important part of the annealing plant. They consist of thermoelements with air-cooled heads and protection tubes, extending into the muffle and the millivoltmeter mounted on the switchboard. The scale of the millivoltmeter is graduated in Centigrade degrees, thus enabling the temperature of the furnace to be read directly. Three contacts, adjustable from the outside, between limits of 20 and 100 per cent of the temperature range, are employed for connecting the alarm and the temperature limiting device for the furnace. When the furnace attains the temperature for which these contacts are adjusted, the auxiliary circuit is closed by the pointer making contact. At first a signal lamp is switched in, then an alarm sounded and finally the main switch is tripped by the intermediate relay with no volt coil. This device protects the material treated as well as the furnace, from the effect of excess temperature and also automatically switches out the furnace at the termination of the heat treatment. In plants in continuous operation the pyrometer should be of the recording type in order to record the temperature in several furnaces or the heat at various places of one furnace at the same time, thus simplifying the supervision.

The width and length of annealing furnaces are determined by the size of the work; the electrical input is fixed by the work to be treated hourly. Furnaces for this purpose can be designed for periodic or continuous working and require little floor space. The adjustability of the electrical current supply between any limits to an infinite degree by an induction regulator enables the material to be worked at the most favor-



Temperature curves when treating heavy work. The temperature rise on the surface of the work is designated I; temperature rise in the center of the work, II; surface temperature having attained the maximum value, A; center of the work having attained the maximum temperature, B; and the maximum admissible temperature, C

able temperature. Overheated material and stoppages can be avoided. The complete absence of oxidizing or sulphurous flue gas reduces burning to the merest trace. Exact regulation of the temperature, automatic switching out at the maximum temperature and complete thermal equilibrium inside the material are other advantages to be realized.

Wire annealing furnaces are vertical cylindrical furnaces, in which the material is heated in baskets or pots. To prevent oxidation, the furnace or the pot is equipped with an inert gas and while cooling, the material is kept under gas pressure. If the weekly output is small, the material may be cooled in the furnace, thus avoiding the use of closed cooling pots.

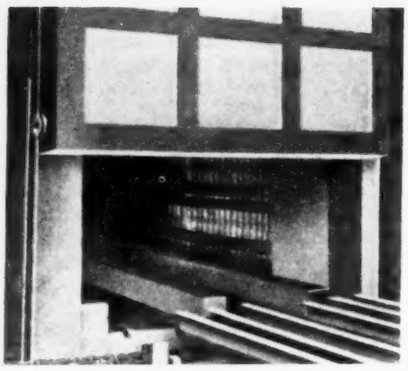
Provide Drying Medium

Electrically heated ovens provide a drying medium ideal for the enameling industry. The uniformity of the temperature over the entire furnace insures the material treated will dry evenly. The heating period for a class of goods can be determined definitely. The output of the furnace thus is increased to its maximum. To enable full advantage to be taken of these properties, a special charging device has been developed which enables the material to be charged or removed from the oven rapidly.

Since the temperature required for the first heating of ceramic products exceeds 1850 degrees Fahr., electric furnaces are not suitable for these articles. Glazing and coloring, however, can be carried out in electric furnaces with great advantage. Hot work, such as porcelain making and glass staining, art enameling and art pottery use electric furnaces to an ever increasing extent on account of their cleanliness.

When examining the cost of electric annealing furnaces and the expenditure for current, other expenses should be considered. The fact that attendance is not needed, the small space required by the furnace, the absence of bunkers and the saving arising from expenses otherwise incurred for cleaning chimney and flues, almost completely compensate any excess due to the cost of current being greater than that of other fuels.

The cost of repairs is small and on account of the long durability the amortization can be extended over a longer period. The increased production, as for example in hot processes, accompanying the use of electric annealing furnaces for the improvement of the work, as well as the absence of any loss of metal by burning away, balances even large deficits when comparing the cost of electric or other kinds of heat treatment. It is possible, therefore, for the method which is apparently the most expensive, in reality to be the cheapest.



Muffle-type enameling furnace showing two rows of the electric heating elements

Adopt Specifications for Galvanized Products

Six tentative specifications relating to galvanized wire and wire products have been advanced to standard by the American Society for Testing Materials following a favorable vote of the society's membership. The specifications included are zinc-coated iron or steel telephone and telegraph line wire, zinc-coated iron or steel tie wires, zinc-coated farm-field and railroad right-of-way wire fencing, zinc-coated chain-link fence fabric galvanized after weaving, zinc-coated barb wire, and zinc-coated steel wire strand.

Standard methods for determining weight of coating on zinc-coated articles has been revised to include an improved method for determining the weight of coating on zinc-coated wire.

In the specifications, the Preece test is recommended for determining only the uniformity of the zinc coating, while stripping tests are provided for weight of coating determinations. In the specifications for line wire and tie wire, wrap tests have been provided which may be specified by the purchaser as a check on the flexibility and adherence of the coatings. The specifications cover materials regularly obtainable in the market.

New Electric Welded Pipe Process Differs from American Practice

RIGHTS to manufacture pipe and tubing under a foreign electric welding process in this country have been acquired by J. L. Sussman, 233 Broadway, New York. Developed in Norway, this process already is being used under license at five foreign plants, including that of Tubes Ltd., Birmingham, England, said to be the largest tube producer in Great Britain. At these plants, tubing is being produced at the rate of 500,000 feet per day. This process, said to have been developed along entirely different lines from any now used in this country, affords the electric welding of hot-rolled stock without pickling, cleaning or shearing being required.

Most methods, it is declared, employ a so-called welding throat, consisting of two electrodes and a supporting roll. This particular process welds gradually and under mechanical conditions that are entirely different. Expansion in the use of this process is now moving beyond the 2-inch outside diameter range.

Quality of Weld Controlled

In this process, a strip is rolled into tubular shape from short or cut lengths rolled separately, or in coils as they come off the hot mill or in coils welded together to form greater lengths. The open seam tube is passed under single rolls in series, receiving from them current or heat graduated in volume and intensity by mechanical means, which control the quality of the weld desired. A complete welding unit occupies the space 5 x 80 feet. The tubes, if preferred, can be rolled first on a separate mill and then be fed into the welding unit. The cost of this semiautomatic equipment is considerably less, but is not as efficient, it is said.

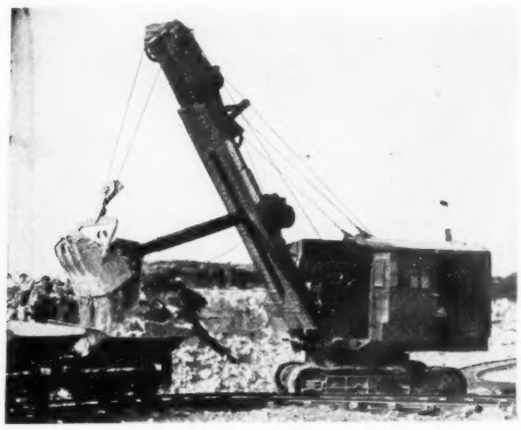
High Speeds not Practicable

Speeds up to 80 feet per minute are in practice. Speeds beyond this, however, do not synchronize well with other operations and hence do not produce the best results. Since heating takes place all around the circumference, the path of the weld is less discernible than when made under certain other processes, it is declared. Inasmuch as the even temper at the path of the weld is the same as elsewhere, it was further claimed that the pipe or tubing produced is unusually easy to thread and bend. The process was conceived in 1920 by an electrical contractor but it was not until 1927 that it met with any pronounced success. Patents in several countries have been issued.

Mr. Sussman recently returned from abroad where he visited a number of steel and machinery plants, most of them located in Great Britain and Germany. He uncovered what he believes to be 10 new processes pertaining to the production of steel and steel products.

ARE You Paying For an Industrial Brownhoist ~ ~ Without Owning One?

Are you spending thousands of dollars every year on inefficient handling methods—money which could be more profitably applied toward the purchase of a good Crawler or Locomotive Crane? The savings effected by one of these machines would soon pay for it and from then on dividends would quickly pile up.



The Type DC Gas Crawler Crane illustrated is a fast operating, convertible machine of 15 tons capacity. Construction features include two speed hoist, two speed travel, and steering independent of all other motions with any degree of traction on both crawlers, for sharp or gradual curves.

Owners of DC machines will tell you that it is the best crane of its capacity on the market, but it may not be the type best fitted for your work. The nearby Industrial Brownhoist representative can help you decide this point, without prejudice, because we build many sizes of both crawler and locomotive cranes, with gas, steam, Diesel or electric power.

The fact that every Industrial Brownhoist is suited to its work is one reason why there are far more of these cranes in service than any other make.

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco.

Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

INDUSTRIAL BROWNHOIST

Straightens and Sizes Pipe in New 9-Stand Dual Mill

SIZING and straightening pipe in ordinary mill practice are effected in two separate sets of rolls. The sizing rolls are similar in design to rolls used in the lap-weld process but are somewhat lighter and reduce the pipe to the required external diameter in about three passes. To correct any irregularities in shape, the pipe leaving the sizing mill is fed into a straightening machine known in mill parlance as cross rolls. This unit is equipped with two curved rolls installed one beside the other on inclined axes and driven through reduction gears by separate motors. The tube in contact with the surface of both rolls for approximately their entire length, or about 12 feet, is given a whirling, cork screw motion with the result that the welded portion is straightened and its surface rounded. As the pipe leaves the cross rolls its external and internal diameters are as near to the required specification as is possible to make them by this method.

How Burr Is Removed

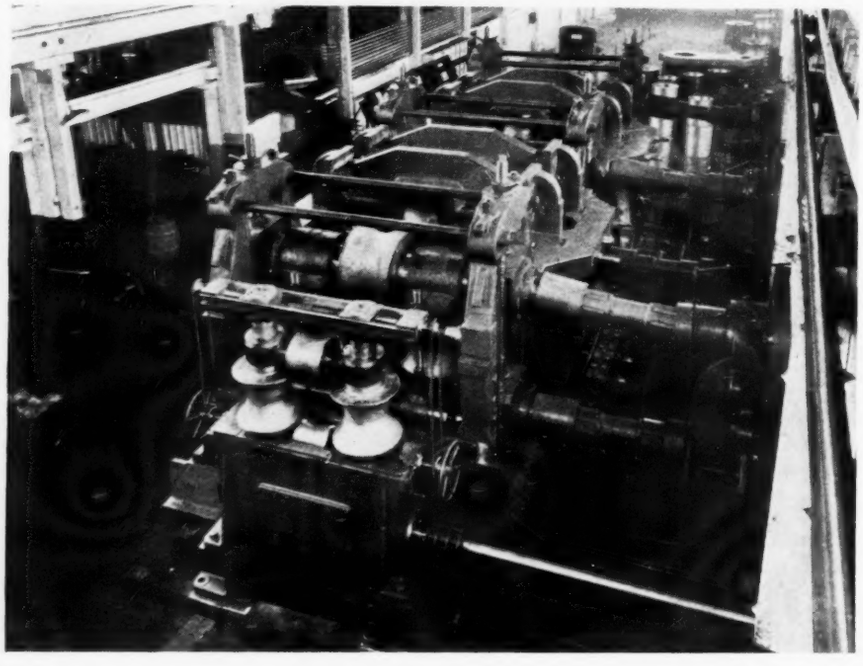
In the electric-resistance method of producing welded pipe, the burr, which develops along the continuous seam by the action of the electrodes, is eliminated by a specially-designed machine. The section then passes through stands of truing rolls and finally is ejected from the welding unit having an approximate straight contour. Additional straightening, however, is required to make the pipe conform to specifications and this is accomplished in a combination mill which straightens and sizes in one operation. The unit was developed by the Yoder Co., Cleveland, especially for use in conjunction with the pipe-forming mills of the 2-high continuous type, recently designed by the same company and described in the Aug. 14, 1930 issue of STEEL.

The straightening and sizing mill, as shown in the accompanying illustration, is a 9-stand unit built to handle pipe in external diameters ranging from 16 to 26 inches, inclusive, and in standard mill lengths. The pipe in transit through the various stands travels at approximately at 100 feet a minute. The second, fifth and eighth stands of rolls are for sizing and the four interposed stands for straightening. A set of starting rolls is positioned at the entrance and a set of finishing rolls at the exit of the mill. All stands are equipped with a cluster of four concave rolls, two mounted vertically and two horizontally, which are brought to the desired contour by micrometer adjusting devices to conform to the diameter of pipe to be straightened and sized.

The three sets of sizing rolls are driven individually through a stand of pinions and a stand of reduction gears by a 60-horsepower adjustable-speed motor. The starting and finishing rolls are driven through chain and sprocket from the countershaft connecting the reduction gears and pinion stands at the front and rear of the mill. All roll, pinion and guide-roll shafts and all shafts incorporated in the pinion and gear-reduction stands are mounted in tapered roller bearings which are lubricated by a pressure system. By the use of antifriction bearings throughout it is possible to turn over the rolls in any particular stand by hand by actuating the drive shaft connecting the motor and reduction gears. The complete mill weighs approximately 450 tons, occupies a floor space of 34 feet long and 30 feet wide and stands 13 feet high. It can be built in various sizes to handle pipe of any commercial outside diameter.

Development in Ceramics To Be Discussed

Among the papers to be presented at the annual meeting of the Electrochemical society, at Hotel Tutwiler, Birmingham, Ala., April 23-24, are several discussions on the latest processes and pronounced improvements which have been developed in the ceramic industry. Included in the presentations are: "Electrically Fired Furnaces for Vitreous Enamels," by H. G. Wolfram, Porcelain Enameling & Mfg. Co., Baltimore; "Refractories for Electric Furnaces," by F. H. Riddle, Champion Porcelain Co., Detroit; "Recent Data on Silicon Carbide as a Refractory Material," by R. C. Benner, Carborundum Co., Niagara Falls, N. Y.; and "Dry Pressed Compositions as Refractories in Heat Appliances," by H. M. Kraner, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.



Combination mill designed for straightening and sizing electric welded pipe 16 to 26 inches outside diameter

Sizing rolls are mounted in the housings shown with tie rods and straightening rolls in housings with arches

STEELS OF TOMORROW

Industrial products of today owe their success,—their very existence, to alloy steels—steels undreamed of only a few short years ago.

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Coast Preparing for Second Metal Congress and Show

SAN FRANCISCO is preparing to officiate as host to the Second Western Metal Congress and Machinery Exposition which is to be held in that city, Feb. 16-20. With the event less than a month away, plans are shaping up rapidly and every indication points to a large attendance despite the general unsatisfactory business situation. It is to be recalled that the first congress and exposition held in Los Angeles in January, 1929, the first of its kind on the Pacific Coast, met with such wide recognition that plans were laid immediately for a second two years later.

As was the case with the first, the second congress and exposition is under the principal sponsorship of the American Society for Steel Treating, which for 12 years has achieved outstanding success in the iron and steel and metalworking industries through its annual congresses and expositions in the eastern section of the United States. W. H. Eisenman, national secretary of the American Society for Steel Treating, Cleveland, has directed the affairs of both western events.

Thirteen Societies Co-operate

Co-operating with the American Society for Steel Treating in the San Francisco meeting and show are 12 other national technical societies and local groups, including the American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Welding Society, Society of Automotive Engineers, American Society for Testing Materials, Institute of Metals, American Institute of Electrical Engineers, American Chemical society, National Association of Purchasing Agents, National Association of Power Engineers, Pacific Coast Electrical association and Pacific Coast Gas association.

Headquarters for the congress will be maintained at the St. Francis hotel, where technical sessions will be conducted at 10 a.m. each morning of the five days. Afternoon sessions at 2 p.m. will be held each day in the assembly room at the Civic Auditorium where the exposition will be located. The technical sessions have been arranged and will be conducted by the various participating groups. Over 30 technical papers on a wide range of metallurgical subjects will be presented, with over half of the authors coming from the eastern part of the country.

The exposition will comprise over 70,000 square feet of floor space in the Civic Auditorium and in appearance will closely resemble the annual metal shows held in the East. Approximately 150 exhibitors have reserved space and of this number perhaps three-fourths are from the eastern states. In many cases, however, eastern manufactures will occupy space jointly with their Pacific Coast representatives. The exposition will be open daily from 12 noon until 10 p.m. One area of 10,000 square feet will be taken up by manufacturers located in the Los Angeles area.

All the officers of the American Society for Steel Treating, including the board of directors, will attend the congress and exposition and a number of them are scheduled to participate actively in the various sessions. The West Coast meetings, that in Los Angeles and the one approaching, serve as semiannual gatherings for the society. That the society can promote such extensive events in the West is possible only because of the organization's wide scope and influence in the metallurgical field.

Many Plants To Be Visited

Numerous plant visitations have been arranged and will afford splendid opportunities for the visitors to see western plants and manufacturing operations. Among scheduled visits are those to the following plants: Pacific Gear & Tool Works; Pacific Coast Steel Corp.; American Can Co.; Hall-Scott Motor Co.; Pacific Foundry Co.; Link-Belt Co.; Pacific Electric Mfg. Co.; California Saw Works; Bethlehem Shipbuilding Corp. Ltd.; Hunters Point Dry Dock; Pelton Water Wheel Co.; Merco-Nordstrom Valve Co., Jewell Steel & Malleable Co.; Western Pipe & Steel Co.; E. H. Edward's Co.; Rheem Mfg. Co.; Atlas-Imperial Diesel Engine Co.; Victor Welding Equipment Co.; Steel Tank & Pipe Co.; and Hubbard & Co. Inc.

Following is the schedule of technical sessions for the congress, indicating the sponsoring group and the titles and authors of papers:

Monday, Feb. 16

MORNING

American Institute of Mining and Metallurgical Engineers

"Improvements in the Physical Properties in Large Carbon and Alloy Steel Castings," by J. Fenstermacher, Unit-

Approximately 70,000 square feet of space in the San Francisco Civic Auditorium will be utilized for the Second Western Metal and Machinery Exposition, Feb. 16-20

ed States Steel Products Co., San Francisco.

"Manganese Steels," by D. H. Young, American Manganese Steel Co., Oakland, Calif.

"The Formation and Elimination of Nonmetallic Inclusions in the Acid Open-Hearth Furnace," by C. H. Herty Jr., supervising chemist, metallurgical section, Bureau of Mines Experiment station, Pittsburgh, and J. E. Jacobs, metallurgist, Heppenstall Co., Pittsburgh.

"High-Test Cast Iron," by F. B. Coyle, research laboratory, International Nickel Co., Bayonne, N. J.

AFTERNOON

American Society for Testing Materials

"Failure of Machine Parts," by L. T. Holt, consulting physical metallurgist, Seattle, Wash.

"Metallurgy of Welding," by Paul Jeffers, structural engineer, Los Angeles.

"High-Strength Steel for a High-Pressure Hydraulic Jack," by G. H. Bragg, Pacific Gas & Electric Co., San Francisco.

Tuesday, Feb. 17

MORNING

Society of Automotive Engineers

"Automotive Steels," by J. M. Watson, metallurgical engineer, Hupp Motor Car Co., Detroit.

"Automobile Wheels," by A. B. Domonoske, professor of mechanical engineering, Stanford university, Palo Alto, Calif.

"Steel Personality," by B. F. Shepherd, chief metallurgist, Ingersoll-Rand Co., Phillipsburg, N. J.

AFTERNOON

American Welding Society

"Recent Developments in Welded-on Overlays," by Miles C. Smith, manager, sales promotion, Stoody Corp., Whittier, Calif.

"Welding Aluminum and Its Alloys," by W. M. Dunlap, research metallurgist, aluminum research laboratories, Aluminum Co. of America, New Kensington, Pa.

"Shape Cut Steel," by C. E. Rhein, sales engineer, Linde Air Products Co., San Francisco.

Wednesday, Feb. 18

MORNING

American Welding Society

"Structural Arc Welding—A Review of What Has Been Accomplished and Its Future," by A. F. Davis, vice president, Lincoln Electric Co., Cleveland.

"Coated Electrodes," by L. A. Stroebel, Stoody Corp., Whittier, Calif.

"A General Specification for Welded Pressure Vessels," by J. C. Hodge, Babcock & Wilcox Co., Barberton, O.

AFTERNOON

Society of Automotive Engineers

"Aluminum Alloys," by W. M. Holshauer, metallurgist, Aluminum Co. of America, Oakland, Calif.

"Magnesium Alloys," by Dr. W. A. Gann, metallurgist, Dow Chemical Co., Midland, Mich.

Thursday, Feb. 19

MORNING

Pacific Coast Gas Association

"Gas Furnace for Nitriding," by J. H. Knapp, president, J. H. Knapp Co., Los Angeles.

"Carburizing Steel by Gas," by R. G. Guthrie, chief metallurgist, Peoples Gas Light & Coke Co., Chicago.

"Progress and Development of Fuel Fired Furnaces," by E. G. de Coriolis, research director, Surface Combustion Co., Toledo, O.

AFTERNOON

American Society of Mechanical Engineers

"Manufacture and Properties of Seamless Steel Pipe," by G. E. McNiff, assistant vice president, National Tube Co., Pittsburgh.

"Nitriding," by Dr. O. E. Harder, assistant director, Battelle Memorial institute, Columbus, O.

"Creep of Metals at High Temperatures," by P. G. McVetty, research engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Machinability of Metals," by A. H. d'Arcambal, consulting metallurgist, Pratt & Whitney Co., Hartford, Conn.

"Seamless Rolled Cylinders," by H. L. R. Whitney, chief engineer, piping and pressure vessel division, M. W. Kellogg Co., New York.

Friday, Feb. 20

MORNING

American Chemical Society

"Recent Developments in Corrosion Prevention of Ferrous Metals," by F. N. Speller, director metallurgical research department, and V. V. Kendall, assistant in metallurgical department, National Tube Co., Pittsburgh.

"Chromium and Chromium-Nickel Steels," by C. C. Snyder, Republic Steel Co., Massillon, O.

"Corrosion and Lubrication of Valves," by G. F. Scherer, Merco-Nordstrom Valve Co., San Francisco.

AFTERNOON

American Institute of Electrical Engineers and Pacific Coast Gas association

"Electricity in the Steel Mill," by G. E. Stoltz, manager of industrial engineering, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"The Use of Electricity in the Heat Treatment of Steels," by G. W. Bernhard, Pacific Gas & Electric Co., San Francisco.

Test Welded Connections

Welded shelf-angle connections, their strength and the possibilities of various methods of fabrication has been the subject of an exhaustive research by the bureau of standards, Washington, which reports the results of this investigation in Research Paper No. 230 "Strength of Welded Shelf-Angle Connections," by James H. Edwards, H. L. Whittemore, and A. H. Skang, of the bureau. The research project tested the connections to destruction. The angles, arc-welded to H-beams, varied in width, thickness, and length.

New High-Pressure Boiler Units Promise Large Steam Output

CHANGES in the main power system now under way at the plant of the Ford Motor Co., Fordson, Mich., include the installation of two high-pressure boiler units which will replace two of a battery of eight; the placing of a powerful steeple-type turbine generator; the introduction of turboblowers at the blast furnaces; and, the building of a water tunnel more than 2 miles long.

Each of the new boilers is rated at 4951 boiler horsepower at 1400 pounds pressure and will supply 700,000 pounds of steam an hour. In all there are five drums weighing about 70 tons each. Four are water drums having a shell thickness of 5¼ inches; and one a steam drum with a shell 3 inches thick. All are 40 inches diameter except the top drum which is 44 inches diameter, and are built of forged steel. The uppermost water drums are 36 feet long; those at the bottom 31¾ feet long; while the steam drum has a length of 26 feet.

Coal and Gas Are Used

The fuel will be a combination of pulverized coal and gas conducted from the two blast furnaces, of which there is available about 92,000,000 cubic feet a day.

The new steeple compound turbine generator, which is to be driven with steam generated by the new boilers, will have a capacity of 110,000 kilowatts at 90 per cent power factor. A feature is that the high-pressure element will be mounted above the low-pressure element to conserve floor space. Both pressure sections will have a capacity of 55,000 kilowatts.

New Blower Is Added

Until November, 1930, air for the blast furnace has been supplied by three centrifugal air compressors rated at 40,000 cubic feet of air a minute at 15 pounds pressure and driven by a 4500-horsepower steam turbine operating under 220 pounds pressure. To this capacity has been added a new turboblower having a capacity of 70,000 cubic feet a minute, at a corresponding air pressure and 250 pounds turbine pressure. The maximum horsepower of the new turbine is 7900. An additional 70,000 cubic feet blower soon will replace one of the present units.

One of the largest tunnels ever built to serve the water requirements of a single industrial concern is under construction at the Ford plant. It will have a daily capacity of 913,600,000 gallons. It is a true cylinder with an inside diameter of 15 feet and an outside diameter of 21 feet. Two thicknesses make up its walls. The outer is composed of interlocking cement blocks weighing 3420 pounds each, ten to the ring. The tunnel is 12,000 feet long and is located 60 feet below the surface of the ground.

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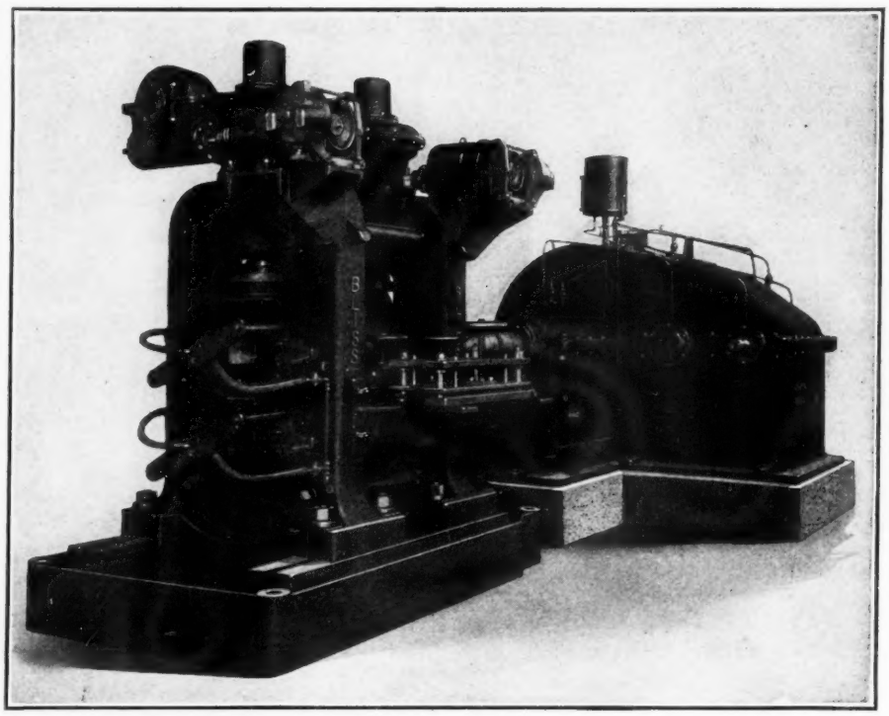

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No. 579

Curbing and Tie Rod Design Affords Outlet for Strip

WHILE the paving industry is observing closely the behavior of the 150-foot experimental stretch of steel base pavement, laid early last fall outside of Springfield, Ill., and described in the Sept. 4, 1930, issue of STEEL, page 25, word comes from that city of the development of a new steel curb. The new type, it is claimed, will reduce by two-thirds the cost of curbing in the resurfacing of worn-out concrete pavement, greatly speed up pavement resurfacing and consume large quantities of hot-rolled strip steel. The idea was developed by W. H. Moseley, paving engineer, Springfield, Ill.

Thus far vitrified brick and bituminous materials have been used principally in resurfacing. In either case, a curb has been required to confine the new surface. These curbs customarily have been of concrete 12 or more inches wide and of equal depth. One objection to this form of construction has been that because the new curb could not be made to bond with the old base, water could seep down between the curb and base, resulting in an unstable subgrade.

The new steel curb design calls for two strips of steel, one on each side of the pavement, held together by strip steel tie rods running across the pavement at necessary intervals. The rods are buried in the cushion in the case of brick resurfacing, or in the asphalt in the case of bituminous resurfacing. The steel would be coated to prevent corrosion.

Curb Is Held Rigid

In case of a brick surface 3 inches thick with a 1 inch cushion, the steel curb would be 6 or 8 inches wide. Four inches would extend above the old concrete pavement and the balance would rest against the side of the old concrete pavement and be held rigidly in place by the tie rods. In this type of construction, the inventor of the idea estimates that as much as $4000 a mile can be saved based on $6000 a mile for concrete curbs as against $2000 a mile for steel curbs.

Designs also have been developed for secondary pavements, which will effect additional savings in the maintenance cost of feather-edge bituminous tops. Much of the maintenance cost on such types of pavement is due to the outer edges breaking down under traffic. Holes develop which become a menace to fastly moving vehicles.

The steel curb would confine the bituminous top and keep it in place. Shoulders could be built up outside the curb on either side. Anchor rods or stakes driven deep into the gravel or crushed stone sub-base would anchor the curb in place and steel tie rods would insure its stability. The inventor estimates that the money saved in maintenance on such secondary types of roads would pay for the cost of such an inexpensive design of curb.

An experimental section of the new steel curb already has been laid near Springfield, Ill., and paving engineers who have studied it are planning to try out the new idea at the first opportunity.

Arc Welded Design Contest Rules Are Prepared

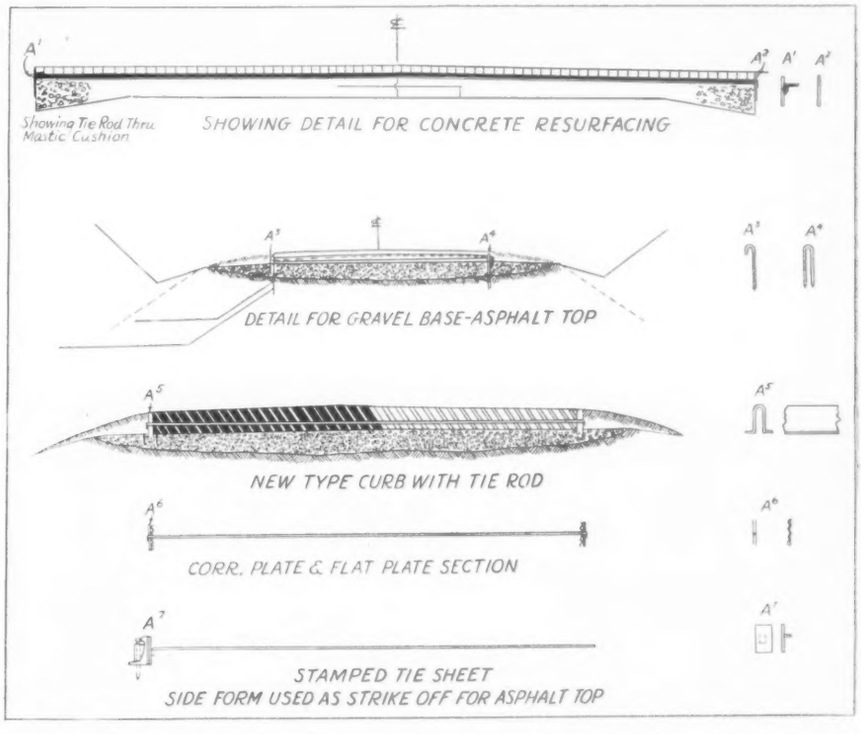
Rules for the second arc welding prize competition have been prepared by Lincoln Electric Co., Cleveland, sponsors of the contest, and copies are now available for distribution. The purpose of the annual award is "to increase the knowledge of the adaptability of arc welding to industry," while the subject matter must be a description of a useful machine, structure, or building that has been designed or redesigned in whole or in part so that arc welding is applied to its manufacture.

The jury of award that will decide the winners of the prizes totaling $17,500 will be the members of the electrical engineering department, Ohio State university, Columbus, O. Papers will be judged by the jury according to the amount of saving in first cost and upkeep resulting from the application of arc welding to the described redesign or new design. All manuscripts must bear evidence of having been mailed prior to Oct. 1, and any paper arriving in Cleveland after Oct. 31 will be disqualified.

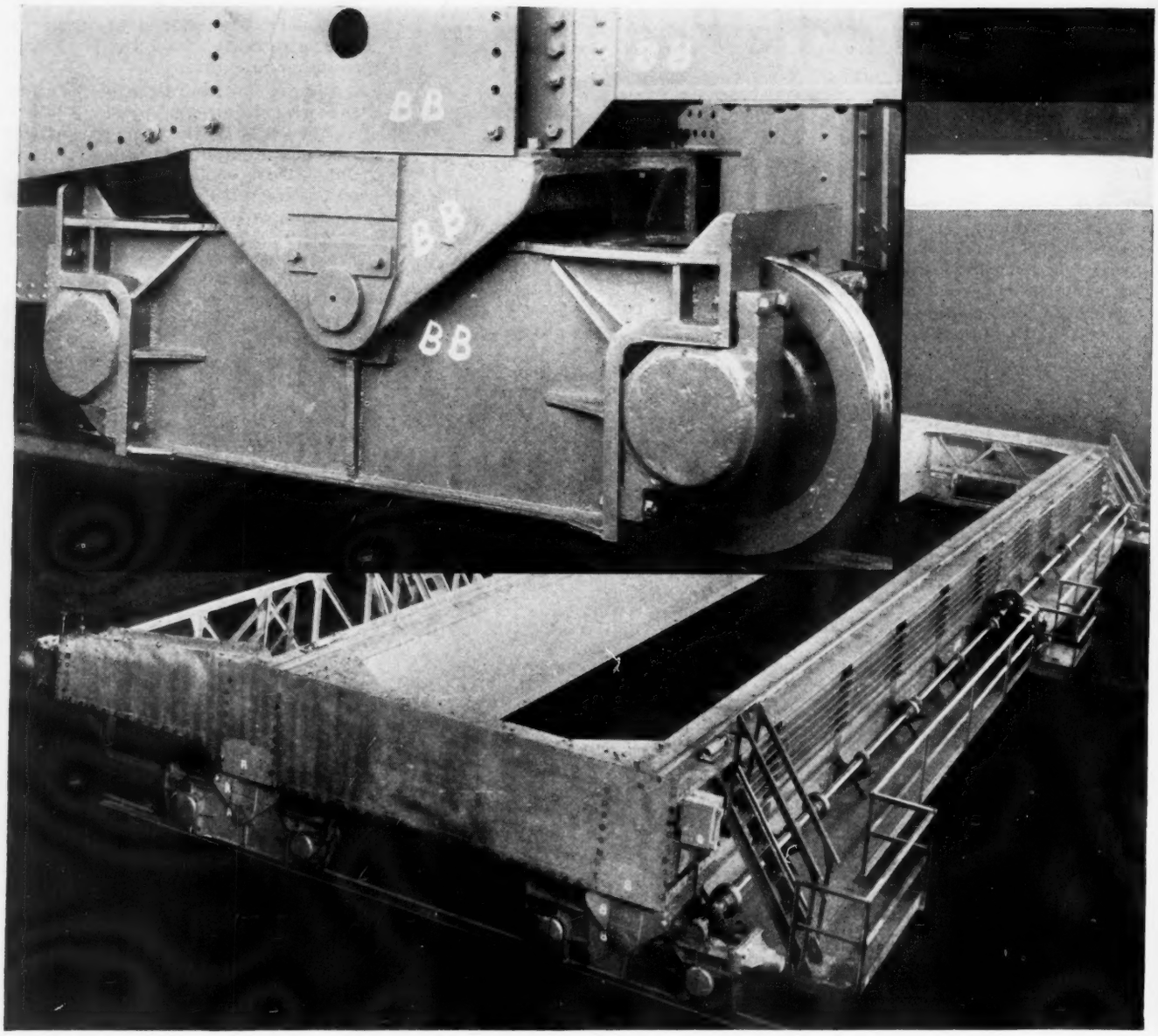
Research Must Eliminate Curse of the Machine

Research in "humanics" to make the machine a blessing instead of a curse to mankind is advocated by Dr. Alfred D. Flinn, director of the Engineering Foundation, New York. Engineers, having created the machine age, must lead the way in eliminating the hardships it has wrought, he declares in outlining plans for engineering research in 1931.

It must soon cease to be possible for any person to say that the blessings of science and engineering are even temporarily a curse, because of the ways in which they are introduced into industry and business, Dr. Flinn asserts. The energies of engineering societies and their research


Showing Tie Rod Thru Mastic Cushion
SHOWING DETAIL FOR CONCRETE RESURFACING
DETAIL FOR GRAVEL BASE-ASPHALT TOP
NEW TYPE CURB WITH TIE ROD
CORR. PLATE & FLAT PLATE SECTION
STAMPED TIE SHEET
SIDE FORM USED AS STRIKE OFF FOR ASPHALT TOP

Designs showing use of curbing and tie rod construction for various types of resurfacing of streets and highways



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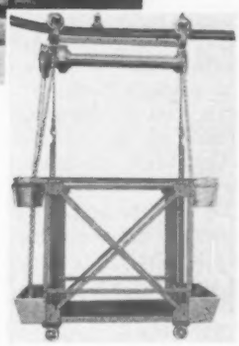

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Atlanta, Ga.	Chicago, Ill.	Easton, Pa.	(See Buffalo)	Mobile, Ala.	Philadelphia, Pa.	Sheboygan, Wis.	Toronto, Ont.
Baltimore, Md.	Cincinnati, Ohio	East St. Louis, Ill.	Johnstown, Pa.	Montreal, Que.	Pittsburgh, Pa.	South Bend, Ind.	Trenton, N. J.
Birmingham, Ala.	Cleveland, Ohio	Elizabeth, N. J.	Joliet, Ill. (See Rockford	Muskegon, Mich.	Portland, Oregon	(See Muskegon, Mich.)	Tulsa, Okla.
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(See Trenton)	Dayton, Ohio	(See Toledo)	Louisville, Ky.	New York, N. Y.	Rockford, Ill.	Syracuse, N. Y.	Youngstown, Ohio
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foundation might profitably be directed to humanics: To adjustments in industry and business to prevent or reduce hardships brought about by great improvements in machines, processes, methods, or materials, displacing existing products, equipment, or plants, and affecting large numbers of persons; and to effects of engineering advancement upon government, international relations, legal practices, social organization, and education.

Markets Cutting Material of Tantalum Carbide

Production of a new hard cutting material for tool tips has been started by Fansteel Products Co., North Chicago, Ill. This material, called Ramet, consists of tantalum carbide combined with nickel as a binder and recently has been subjected to rigid and unusual tests in machining and cutting tool tips are copper brazed on tool shanks in electric-hydrogen furnaces. Low thermal conductivity, economy in grinding operations and long life between grinds are among the advantages claimed for the material.

The new material, it is understood, is being used in about 75 plants in usual and extraordinary machining operations; tests, it is said, have demonstrated ability to cut with standard machining results 12½ to 15 per cent manganese steel castings. The Fansteel company is producing the material to be distributed through machine tool manufacturers, which are to co-operate under license arrangements.

Discuss Cupola Operation at Southern Regional Meeting of Foundrymen

THREE hundred foundrymen, representing all of the Southern states and many foundry centers of the North, met at Birmingham, Ala., Jan. 20 and 21, for the Southern regional meeting of the American Foundrymen's association, the first affair of its kind to be held in that section of the country and the second to be sponsored by the association.

As an introduction to the discussion on cupola practice, Willard H. Rother, Buffalo Foundry & Machine Co., Buffalo, read the "Recommended Practice Drawn up for 54-inch Cupola Operation" as prepared by a committee of the foundrymen's association. W. L. Raneche, McWane Cast Iron Pipe Co., Birmingham, questioned the statement that 30,000 cubic feet of air is required for each ton of iron melted. He stated that his plant is melting with 18,000 cubic feet of air per ton of iron melted and that hot iron is obtained.

Figure Is Arbitrary

Frank M. Robbins, Ross-Meehan Foundries, Chattanooga, Tenn., stated that the figure supplied in the recommendations is rather arbitrary and suggested that more study be given that particular subject. Max Kuniansky, Lynchburg Foundry Co., Radford, Va., stated that while his plant is using approximately 30,000 cubic feet, he believes the amount necessary will vary with the grade of coke used.

H. B. Swann, Cadillac Motor Car Co., Detroit, indicated the importance of considering the thermal efficiency of the cupola. Donald J. Reese, Whiting Corp., Birmingham, explained that the recommendation of 30,000 cubic feet of air was based on a 10 to 1 melting ratio with a coke having a carbon content of 100 per cent. A higher melting ratio will require less coke and likewise a lower melting ratio will necessitate more coke.

H. Bornstein, Deere & Co., Moline, Ill., leading a discussion of high-test gray iron, pointed to the lack of a suitable definition for high-test gray iron. American Society for Testing Materials' standard for high-test gray iron call for 33,000 pounds per square inch tensile strength, but this figure does not seem to cover the modern high-test gray iron, which Mr. Bornstein believed should give a minimum of 40,000 pounds per square inch, many plants producing iron with 50,000 and even 60,000 pounds per square inch tensile.

Care must be exercised in correlating test bar results with the properties found in the castings, according to Mr. Bornstein. Gating practice will have to be changed in making high-test gray iron, and until definite results have been determined for a particular type of work, it is best to break the castings to determine the properties in the castings rather than in the test bars. After a standard is established, test bar results and casting properties may be correlated and the test bars used as a guide.

Not Universally Suitable

The fact that high-test iron may not be suitable for all purposes was illustrated by an example of a steel wheel having an iron hub cast around the spokes in a permanent mold. It was found after considerable experimental work that the high-test iron produced a weaker hub than one made of soft iron. It is thought that when the metal solidifies it puts a tension on the spokes of the wheel and since the soft iron solidifies at a slower rate, less of a strain is placed on the hub and spoke.

E. K. Smith, Stockham Pipe & Fittings Co., Birmingham, raised a question regarding the strength of two metals of identical composition, one melted in the electric furnace and one in the cupola. Mr. Bornstein stated that he was unable to give that information, but he thought that the electric furnace iron would be machined more easily.

Phosphorus Is Detrimental

In answering a question of J. D. Stoddard, Detroit Testing Laboratory, Detroit, regarding the effect of phosphorus in iron, Mr. Bornstein stated that in his opinion a higher phosphorus content increased the strength slightly but was detrimental on impact tests.

A session on foundry costs developed some interesting discussions under the leadership of L. N. Shannon, Stockham Pipe & Fittings Co., Birmingham. In opening the discussion, R. E. Kennedy, technical secretary, American Foundrymen's association, Chicago, outlined the material to be considered. B. H. Johnson, Florence Pipe Foundry & Machine Co., Florence, N. J., told of the cost work that is being carried on by the Gray Iron institute and related some experiences of the cost group in the Philadelphia district. Mr. Shannon commented on the cost system for gray iron foundries prepared by the Gray Iron institute and recommended by the cost committee of the foundrymen's association.

An interesting address by S. Wells Utley, Detroit Steel Castings Co., Detroit, featured the informal banquet held in the evening. Hugh Morrow, president, Sloss-Sheffield Steel & Iron Co., Birmingham, was toastmaster. The second day of the convention was devoted entirely to plant visitations.

Research Group Organized at Purdue University

The financing of research projects and the handling of matters pertaining to inventions and patents for the benefit of the state at large, the university and industrial organizations are the principals upon which Purdue university, West Lafayette, Ind., has organized a nonprofit organization to be known as Purdue Research Foundation. Directors of the new foundation are: J. R. Francis, president, Marvel Carburetor Co., Flint, Mich.; J. K. Lilly, president, Eli Lilly & Co., Indianapolis; David E. Ross, president, Purdue university board of trustees, Lafayette, Ind.;

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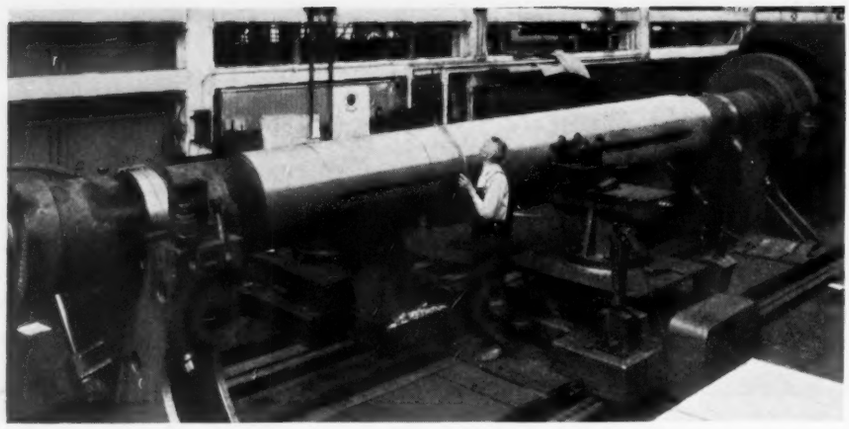


MACHINES FORTY-SIX TON SHAFT

What is believed to be the largest shaft ever made for an industrial application, and possibly the largest ever to be machined is shown here in the shops of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This 46-ton shaft, one of two shafts for a double armature steel mill motor, is 34½ feet long and measures 68 inches in diameter at the flange and 31⅝ inches at the shaft

G. Stanley Meikle, director of research relations with industry, Purdue university; L. A. Downs, president, Illinois Central railroad, Chicago; L. W. Wallace, executive secretary, American Engineering council, Washington; Dr. E. C. Elliott, president, Purdue university; James W. Noel, attorney, Indianapolis; James L. Kimbrough, treasurer, Indiana Bridge Co., Muncie, Ind.; Robert M. Feustel, executive vice president, Midland Utilities Co., Fort Wayne, Ind.; D. M. Buchanan, president, Old Ben Coal Corp., Chicago; William L. Batt, president, S. K. F. Industries, New York.

Mining and Metallurgical Engineers Plan Meeting

Preliminary announcement has been made of the 140th meeting of the American Institute of Mining and Metallurgical Engineers, Feb. 16-19, at Engineering Societies building, New York. Sessions on mining methods, mine ventilation, ground movement and subsidence, milling methods, nonferrous metallurgy, nonmetallic minerals, mining geology, geophysical prospecting and engineering education have been arranged in addition to extensive programs by the iron and steel, institute of metals, coal and petroleum divisions of the institute.

A feature of the iron and steel divisions program is the Howe Memorial lecture, to be delivered this year by Dr. F. F. Lucas, Bell Telephone Laboratories, Inc., New York, who will speak on the art of metallography. The complete technical program of the iron and steel group, as tentatively arranged, is as follows:

"On the Art of Metallography," (Howe Memorial Lecture) by F. F. Lucas.
"The Open-Hearth Steel Process as a Problem in Chemical Kinetics," by Eric R. Jette.
"A Thermodynamic Study of the Phasial Equilibria in the System Iron-Carbon," by Yap, Chu-Phay.
"Influence of Dissolved Carbide on the Equilibria of the System Iron-Carbon," by Yap, Chu-Phay.
"Inclusions and Their Effect on Impact Strength of Steel," by A. B. Kinzel and W. Crafts.
"The Carbon-Oxygen Equilibrium in Liquid Iron," by H. C. Vacher and E. H. Hamilton.
"A Study of the So-called 'Over-Reduced' Condition in Molten Steel," by J. V. McCrae, R. L. Dowdell and Louis Jordan.
"The Austenite-Pearlite Transformation and the Transition Constituents," by Albert Sauveur.
"The Permanent Growth of Gray Cast Iron," by W. E. Remmers.
"Some Notes on Blue Brittleness," by Leland Russell van Wert.
"Bright Annealing of Steels in Hydrogen," by Floyd C. Kelley.
"Research on Blast-Furnace Slags," by Richard S. McCaffery.
"Determination of Viscosity of Iron Blast-Furnace Slags," by Richard S. McCaffery, Clarence H. Lorig, Ira N. Goff, Joseph F. Oesterle and Oscar O. Fritsche.
"The Effect of Magnesia on Slag Viscosity," by Richard S. McCaffery, Joseph F. Oesterle and Oscar O. Fritsche.
"A Statistical Analysis of Blast-Furnace Data," by Richard S. McCaffery and Ronald G. Stephenson.
"Air Discharge of Circular Tuyeres," by Richard S. McCaffery and Daniel E. Krause.

To Discuss Malleable Iron and Temperature Effect

Symposiums on "Malleable Iron Castings" and the "Effect of Temperature on the Properties of Metals" will be features of the program for the annual meeting of the American Society for Testing Materials to be held at Hotel Stevens, Chicago, June 22-26. The session on the effect of temperature will be sponsored jointly by the society and the American Society of Mechanical Engineers. It is being offered to afford an opportunity to discuss the engineers' needs for alloys to withstand high temperatures and high stresses and what the possibilities and limitations of available alloys are:

Critical data on the properties of malleable iron castings will be put before engineers in concise form. In addition to the submission of data, there will be discussions of properties that may not at present be capable of completely authoritative treatment, but which may have significant bearing upon engineering applications of the product. The symposium will be divided into two parts, the first part being the submission of data on the properties of malleable iron castings, and the second part consisting of presentation of separate papers.

To Install 20,000-Kilowatt Mercury-Vapor Turbine

A 20,000-kilowatt mercury-vapor turbine generator is to be installed in a new power plant at Schenectady, N. Y., said to be the largest of its type and the first power installation ever to have co-ordinated industrial requirements and utility sources of power. The $4,000,000 development will be leased and operated by the New York Power & Light Corp. and will supply electric power for the power company's transmission system and steam for uso in plants of the General Electric Co., on whose property the generating station is to be located.

In addition to the 20,000-kilowatt mercury boiler and turbine, the new outdoor station will include a steam boiler to supply 300,000 pounds of steam per hour, as well as a by-product output of 330,000 pounds per hour from the mercury condenser. Adjacent to the power station site is the substation through which the electric energy from the mercury turbine is supplied to the 110,000-volt transmission system.

Mercury required in the boiler will weigh approximately 250,000 pounds. The principle of operation is as follows: Mercury is boiled and vaporized at a pressure of 125 pounds gage and a temperature of 958 degrees Fahr. The mercury vapor drives a mercury turbine and at the exhaust end of the turbine the mercury vapor still contains sufficient heat to vaporize water and make steam at pressures in common use. A large part of the power generated from the mercury turbine is obtained at high efficiency since practically all the heat in the exhaust is utilized.

Power Generation Outlined

Steam power generation and the equipment best suited to its development are outlined in an elaborate 64-page booklet, "Modern Power Plant Equipment, 1930-1931," recently published by the International Nickel Co., New York. The publication, that

stated purpose of which is to contribute to the final estimate of practical worth of the modern developments in the power plant field, includes articles on "Where We Stand Today in Power Generation—and Why," by P. W. Swain, associate editor, *Power*, New York, and "How Materials Affect Progress in Steam Power Generation," by C. Harold Berry, professor of mechanical engineering, Harvard university, Cambridge, Mass. The characteristics and properties of monel metal in power plant equipment also are presented. The booklet includes 32 advertisements, reprinted from leading business papers, which advertise power plant equipment manufactured in whole or in part from nickel-copper alloys.

Offer Four Fellowships in Mining and Metallurgy

In co-operation with the bureau of mines and the Missouri state mining experiment station, the school of **mines and** metallurgy, University of Missouri, Rolla, Mo., is offering four fellowships in metallurgy and mining. These fellowships are open to graduates who have the equivalent of a bachelor of science degree, have had the proper training in mining, metallurgy or chemistry, and who are qualified to undertake research work. Fellowships will be granted in the following subjects: Ore dressing: problems in concentration, including grinding, classifying, tabling, flotation of sulphides and nonsulphide ores, and magnetic concentration; dissection of ores by elutriation, heavy liquids, and microscopic study by petrographic and mineragraphic methods. Applications for the fellowships should be addressed to Director, school of mines and metallurgy, University of Missouri, Rolla, Mo.

To Meet in Biloxi

The Concrete Reinforcing Steel institute, will hold its seventh annual meeting at Edgewater Gulf hotel, Biloxi, Miss., March 16-18. The program for the meeting is now being assembled and will be announced in a few weeks.

Dull Year's Iron Ore Train Twice Across Continent

(*Concluded from Page* 37)

Michigan by the Ford company, including several small mines, indicates its purpose to produce more of its own ore. In the spring of 1930 the company contracted for about 400,000 tons in the open market.

The properties recently acquired by the Ford company contain a large amount of low-grade ore, suggesting its confidence in the ultimate outcome of experiments conducted for it in concentrating and in direct reduction.

Five new mines started shipping in 1930, the largest of which is the Holman-Brown, a subsidiary property of the Cleveland, Cliffs Iron Co., with 553,699 tons. The Steel corporation lists as a new mine the Mahoning-Rust, with 147,342 tons. Butler Bros., began shipping from its Halobe mine, with 136,324 tons. They also shipped 14,179 tons from the Ann, a new mine. The other is the Drew mine of the Dohm Mining Co. All are on the Mesabi range.

For the second consecutive season no shipments were made from the Mayville-Baraboo range in Wisconsin. No shipments were made from Canadian mines.

According to the Lake Superior Iron Ore association's reports the beneficiated ore shipped in 1930 was 39 per cent of the total, compared with 35 per cent in 1929. Last year the ore crushed and screen amounted to 12,037,840 tons; washed, 4,947,841 tons; jigged, 923,810 tons; dried, 126,003 tons; and sintered, 320,939, a total of 18,356,433 tons.

Western Automatic Sprinkler Co., Chicago, has changed its name to the Tyne Co. and has increased capital from $100,000 to $300,000.

Convention Calendar

Jan. 29—Steel Founders' Society of America. Annual meeting at Hotel Hollenden, Cleveland. G. P. Rogers, 932 Graybar building, New York, is managing director.

Feb. 10-13—Mid-West Power Engineering Conference. Annual meeting at Chicago. G. E. Pfisterer, 308 West Washington street, Chicago, is secretary.

Feb. 16-19—American Institute of Mining and Metallurgical Engineers. Annual meeting at Engineering Societies building, New York. H. Foster Bain, 29 West Thirty-ninth street, New York, is secretary.

Feb. 16-20—American Society for Steel Treating. Semiannual meeting in conjunction with National Western Metal congress at St. Francis hotel, San Francisco, Calif. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.

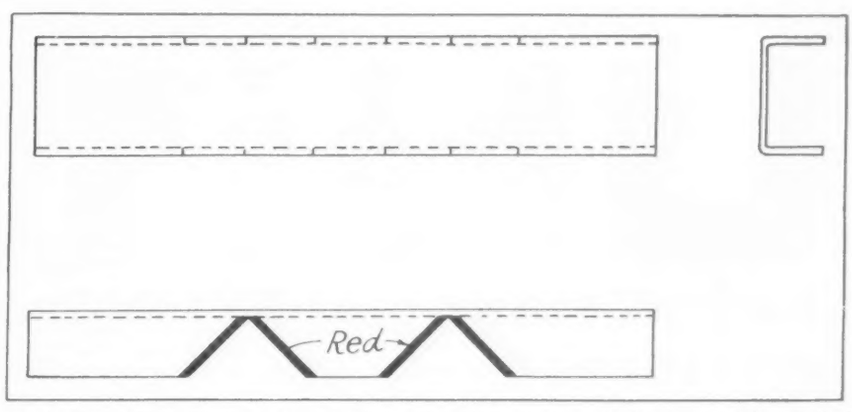
Feb. 16-20—National Western Metal congress. Second biennial meeting, at Civic auditorium, San Francisco, Calif. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.

Feb. 22-28—American Ceramic society. Annual exhibit and convention at Public auditorium, Cleveland. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

Flexible Templets Provide Accuracy

BY C. B. DEAN

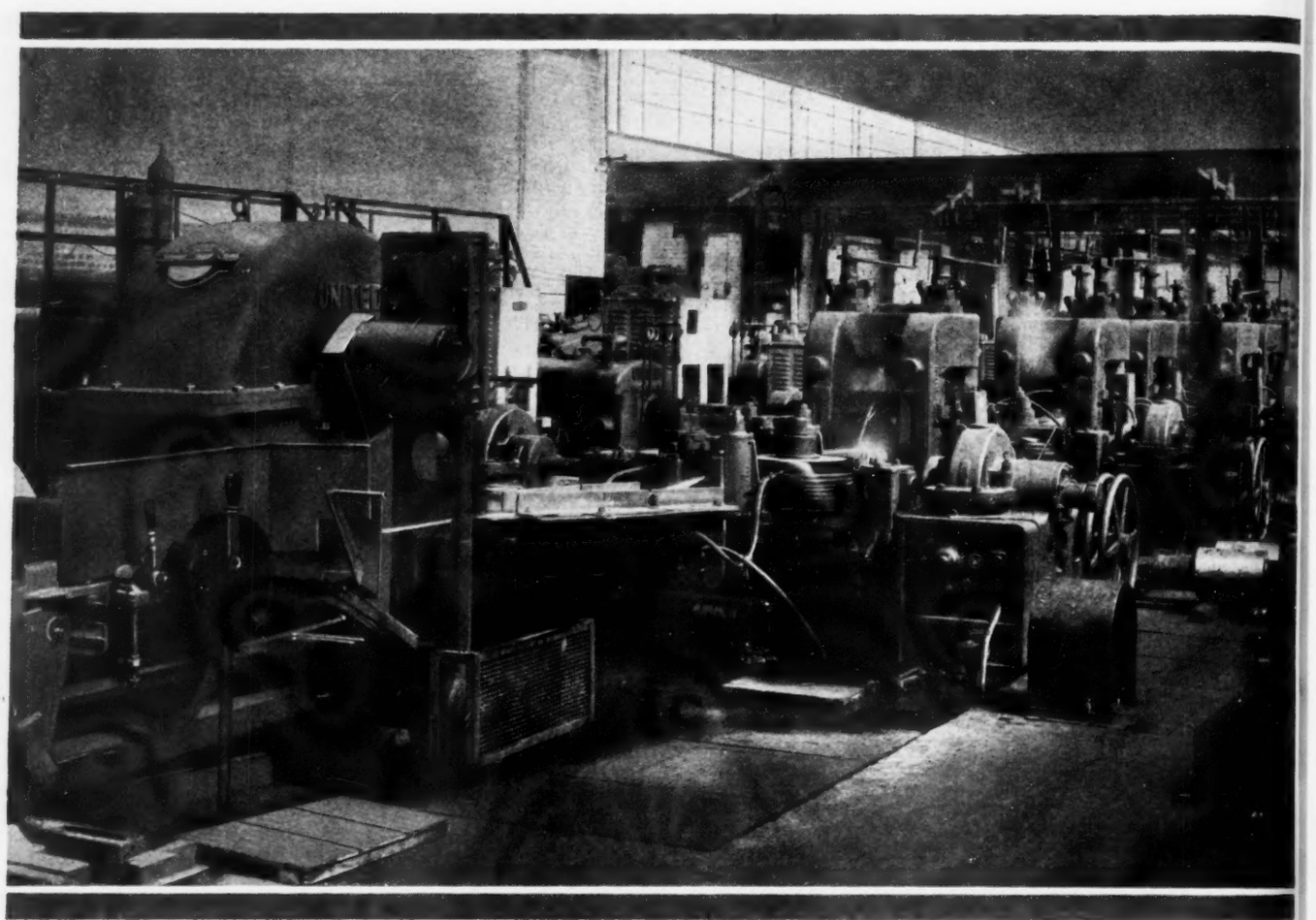
IRREGULARITIES in the rolling of a channel, H or I-beam often have made it difficult for an operator marking this beam for fabrication to hold the templet close to the surface being marked. This is particularly true when the templet is of the "overcoat" variety, made to fit over the flanges of the beam, and when the beam is long. The flanges of the templet make it so rigid that if the beam is not perfectly straight, and few of them reach the shop in that condition, the holes in some part of the templet are thrown out of their true position and trouble is bound to develop in fitting up the job. This trouble can be eliminated by notching the flanges of the templet, as shown in the accompanying illustration, allowing it to bend to conform with the steel being worked. The edges of the notches may be painted red to indicate that they are not to be used for marking purposes. The cuts should be placed at convenient places on the flanges where they will not interfere with other marks or holes.



Notches in the side of the templet are cut at an angle of 45 degrees. The shaded areas may be painted red to indicate that no cut is to be made at those points

FRONT END FLYING SHEAR

PATENT APPLIED FOR



Front End Flying Shear operating in a high speed strip mill. This mill is producing at a finishing mill speed of 2500 feet per minute.

UNITED

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH,---------- PENNSYLVANIA

THE WORLD'S LARGEST MAKER OF

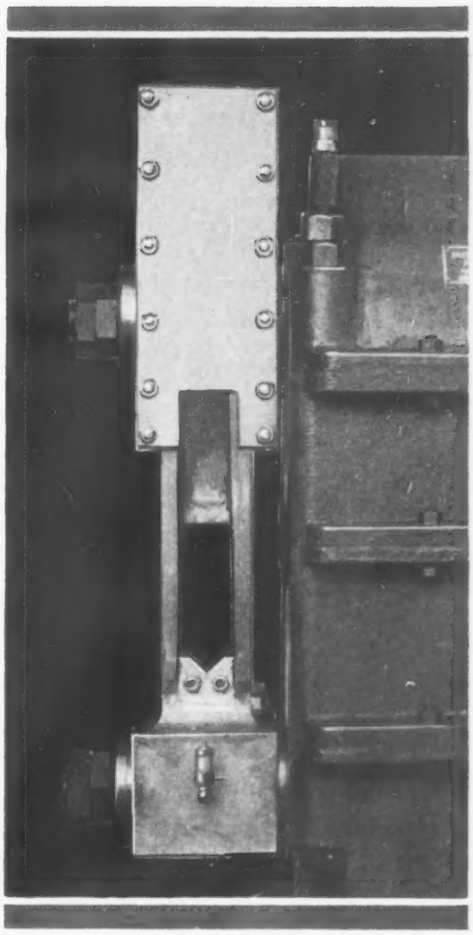
For *Strips, Flats, Rounds, Squares, Etc.*

Cobbles in the finishing stands due to bad front ends, one of the greatest problems to be met in the high speed production of hot strips and merchant sections, can be practically eliminated by the installation of a "United" Front End Flying Shear.

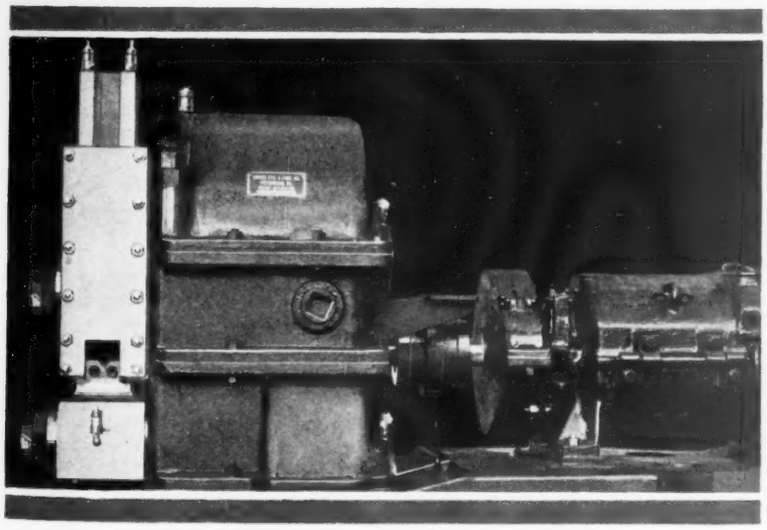
Located behind the last roughing stand, this shear will crop off the bad or split front ends of the section "on the Fly" as it comes from the roughing mill, leaving a clean square edge and insuring a free, uninterrupted passage thru the finishing stands.

A large middle west steel company using one of these shears in connection with a high speed merchant mill recently operated for a complete turn without a single cobble.

"United" Front End Flying Shears are built in various sizes with capacities for cutting up to 2" square hot steel, at roughing mill speeds up to 1000 feet per minute.



View of shear showing cutting knives open.



View of shear showing cutting knives closed.

ROLLS AND ROLLING MILL EQUIPMENT

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Alloy Steels

Comparative physical properties of chrome-nickel, chrome-manganese and manganese steels, a paper by C. L. Clark and A. E. White, presented at the annual meeting of the American Society of Mechanical Engineers, Dec. 1-5, 1930, 4½ pp., 5 tables, 3 charts, 1 illust.

Results of short-time tensile tests at 75 and 1000 degrees Fahr., and creep tests at 1000 degrees Fahr. on certain selected steels are presented. The steels investigated belong to either chrome-nickel, chrome-manganese or the manganese series. Certain other alloying elements such as silicon and tungsten were present in addition. The chrome-nickel steel specimens were taken from both bar and tube stock and certain of them were tested in both the hot-rolled and water-quenched conditions.

Test data indicate that the substitution of manganese for nickel in chrome-nickel steels is detrimental, at least insofar as the load carrying ability of the alloy is concerned; also that while the creep resistance of the manganese and manganese-tungsten steel at 1000 degrees Fahr. is superior to that of many pearlitic steels, it is not equal to that of the chrome-nickel austenitic type of alloy.

—STEEL 1-29-31

FABRICATION:

Photoelasticity

Stress analysis of mechanical shapes for gears, bolts, suspension insulators, glassware and locomotive side frames, discussed by R. V. Baud, in Machine Design, December 1930, p. 27, 4 pp., 11 illusts.

Principal results are sketched to enable the machine design executive to form his own opinion of the usefulness of photoelastic stress analysis. The maximum shear stress of gears does not occur at the surface in contact, but somewhat below this surface. It was found that unless gears are designed especially with a contact ratio larger than 2, the maximum shear stresses are larger near the pitch point, since one tooth alone carries the total load for this particular angular position of the gear. It was found with bolts that the first two threads take five-eighths of the total load. The last thread of the model studied carried less than one-eighth of the total load. From this and other studies it was concluded that the first six threads carry practically the entire load. From test results of locomotive side frames and on other frames having fillets up to 1-inch radius, that with the exception of the stresses in fillets of small radii the experiments check the analytical work closely.

—STEEL 1-29-31

PRODUCTION:

Munitions Manufacture

Heat treatments effected in the furnaces at Frankford arsenal, described by J. B. Nealey, Industrial Gas, January, 1931, p. 22, 3½ pp., 5 illusts.

The manufacture of small arms ammunition is difficult and complicated and requires skilled and experienced workmen, close manufacturing control, very rigid inspection both during manufacture and after, especially developed machines which are complicated and unique in design, tolerances extremely small with little wear allowed on tools, a careful balance on the sensitivity of the primer and continuous firing test to check manufacture and determine whether any failures have crept in during the many operations. The author surveys the manufacturing operations employed in the arsenal at Frankford, Pa., and presents a step-by-step description of them.

—STEEL 1-29-31

Alloy Additions

Essential factors in the use of nickel and chromium in gray iron, discussed by F. J. McGrail, in The Foundry, Jan. 15, p. 52, 2 1/3 pp., 12 illusts.

Many failures from the use of nickel and chromium have resulted because melting conditions were not in accordance with good cupola practice. If more than 0.60 per cent chromium is added to the base mixture, it will increase shrinkage, hardness and chill. The ratio of nickel to chromium gives the best results when used in the proportion of 2:1 except in heavy sections when a 1:1 ratio may be used and the castings machined without difficulty. A method of adding these alloys, consists of placing the alloys in a V-shaped steel sheet about 30 inches long and letting the alloys sprinkle into the molten metal running from the cupola. The loss of nickel by oxidation in melting is small. The melting loss of chromium will average from 6 to 8 per cent. Round test bars, 1¼ x 15 inches, and broken transversely on 12-inch centers give the most reliable information for determining the physical properties in castings in which these alloys are used.

—STEEL 1-29-31

MISCELLANEOUS:

European Industries

The mineral industries of Europe as affected by postwar rehabilitation, summary of an address by H. Foster Bain, secretary, American Institute of Mining and Metallurgical Engineers, in Engineers and Engineering, December, 1930, p 323, 3½ pp.

New boundary lines in continental Europe, laid down after the war, have caused the construction of additional productive capacity without the creation of correspondingly increased consumptive capacity. New territorial divisions have created uneconomical divisions of raw materials, principally coal and iron, and have forced countries to produce on a large scale to reduce costs, resulting in overproduction in general with its attendant grief.

On the other hand, cartels, although never long-lived, have helped to keep up trade, as has the inflow and internationalization of capital, a great many American firms now operating plants abroad. American methods of engineering and management are being applied advantageously, wages trending upward and costs downward.

—STEEL 1-29-31

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Electric Hoist Operates with Low Head Room

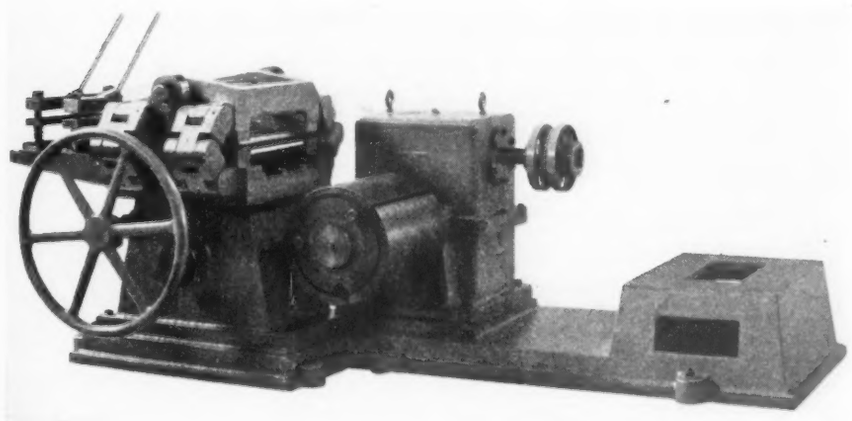
Chisholm-Moore Hoist Corp., 5046 Lakeside avenue, Cleveland, is announcing a wire-rope electric hoist that can be operated under extremely low head room conditions. One of these hoists of ¼-ton lifting capacity measures only 13 inches from the bottom of runway beam to a bearing point of the lower hoisting hook. Design of this hoist is very simple and all parts are readily accessible. It is supplied with or without lug suspension for stationary mounting, or with ball bearing push-type trolley. Push button control is standard. Rotating parts are carried on roller bearings lubricated by a continuous grease bath. The motor, which is fully enclosed, is equipped with a magnetic brake which operates as soon as current is cut off. This provides accurate control and prevents drifting of the load.

◆

Breaker Prepares Strip for Tube Manufacture

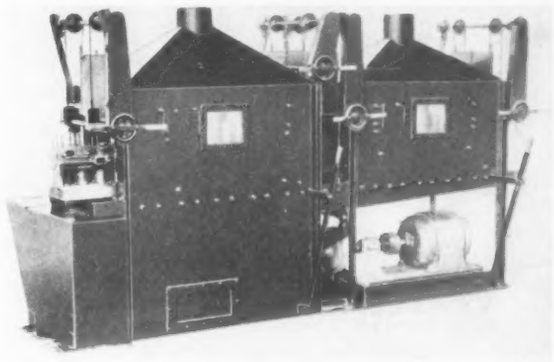
D. A. Clark Co., 1578 Lakeland avenue Cleveland, has designed a machine which breaks down the fibre of rolled strip steel by drawing it through a series of small rolls, adjusted to give varying degrees of distortion within the smallest arc of contact. The device, shown in the accompanying illustration, was designed to prepare steel for tube manufacture. In this process the usual finishing mill operation is omitted, as the "breaker" is more rapid in accomplishing the required reduction in gage, as well as giving an increase in temper and yielding a strip in perfectly straight and flat condition.

The roller head is provided with universal adjustment, and a double, quick-acting wiper. All motive power is applied through a collapsing head which pulls the strip through a series of idler rolls. The use of this machine is by no means confined to tube stock. Steel strip used for many other purposes may be improved by the molecular changes produced by the treatment.



Designed primarily for tube stock, this breaker effectively reduces gage, straightens and flattens strip stock

By means of sprays of solvent, followed by blasts of high pressure air, this automatic cleaning machine prepares castings for assembly



Combination Tool Performs Many Operations

Milwaukee Electric Tool Co., Milwaukee, has designed a combination tool that will bore holes up to 5/16-inch diameter and is also equipped with useful hammer and chisel attachments. The hammer attachment, constructed with only two moving parts, is so designed that it can be attached quickly to the drill without the aid of a screw driver or wrench. It delivers 3600 blows per minute. By substituting chisels for star drills the machine can be used for all kinds of chipping operations. The motor operates on either alternating or direct current and can accommodate 32, 110, 150 and 220 volts. Weight is 9½ pounds.

◆

Automatic Cleaner Insures Dirt-Free Castings

N. Ransohoff Inc., Cincinnati, has built a device for cleaning cylinder blocks and other castings before final assembly. This piece of equipment, shown in the accompanying illustration, consists of two vapor-tight chambers through which the casting is carried by a roller conveyor. An automatic stop holds the conveyor at the first station, at which point a number of nozzles spray solvent on and into the casting, the nozzles being so arranged as to register accurately with all the valve holes and with the cylinder bores. The solvent loosens all grease, oil, dirt, chips, etc.

The cylinder block then travels into

True economy in welding

Once the initial cost of the welding machine has been written off, the principal cost items of a welding job are labor and welding wire.

In most cases, the cost of the welding wire is insignificant compared with the cost of labor. Yet the strength and dependability of the welds largely hinge on the quality of the deposited metal.

Since welding wire plays such an important part in the production of good welds—but represents a very small part of total welding cost—is there real economy in using anything but the best welding wire, particularly when the best costs so little more?

Thousands of plants and utilities—including the country's foremost manufacturers and railroads—attest to the economy and superiority of Roebling Welding Wire. We invite you to test it and we'll gladly furnish samples. Made in various analyses, in both gas and electric types.

JOHN A. ROEBLING'S SONS CO., TRENTON, N. J.

Wire · Wire Rope · Flat Wire · Copper and Insulated Wires and Cables

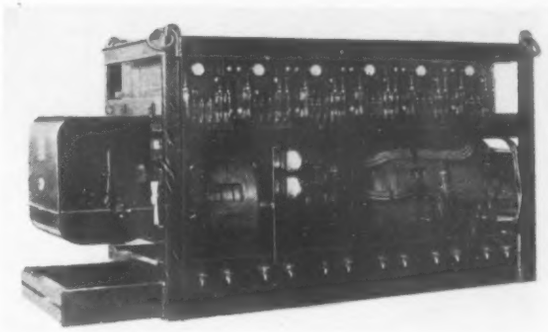
New York Chicago Philadelphia Atlanta Cleveland
San Francisco Los Angeles Seattle Portland

ROEBLING WELDING WIRE

the next compartment, where a second series of nozzles, similarly placed, subject the castings to air blasts under high pressure, thus removing the loosened dirt and such excess spirits as may remain in pockets in the castings. The nozzles are so mounted that the pull of a lever repositions them to register with a different size of cylinder block. The solvent is circulated under 35-pounds pressure, by a direct motor-driven centrifugal pump, and a distillation system has been provided so that contaminated spirits may be run through a still, removing all grease, oil, chips, iron rust and abrasive materials, thereby making the material fit for reuse.

New Multiple-Arc Welders Feature Close Control

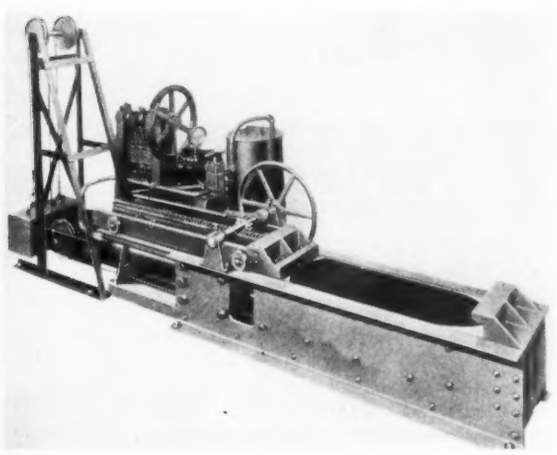
Wilson Welder & Metals Co. Inc., North Bergen, N. J., recently announced a new line of constant-potential multiple-arc electric welding machines which features especially close control. These welders, one of which is shown in the accompanying illustration, are four-bearing, single motor-generator sets. They are built in units ranging from 400 to 1500 amperes per hour. Panels may be mounted either on the frame of the motor-generator set or separately in any part of the plant.



Constant-potential multiple-arc welding machines have four bearing, single motor generator sets, and feature unusually close control

New Scrap Press Combines Two Baling Principles

Galland-Henning Mfg. Co., Milwaukee, has developed a metal scrap press which combines the single-ram action of a mechanical-type baler with powerful hydraulic action. This baling press, which is shown in the accompanying illustration, is simple in design and rugged in construction, ample loading space being provided. The cylinder is of forged steel, and the ram is equipped with an outside packed gland. The valve is of simple screw type and no gaskets are required. The press has a charging box 48-inches long, 16-inches wide and 13-inches deep, and produces hydraulically compressed bales 5 x 5 x 13 inches.

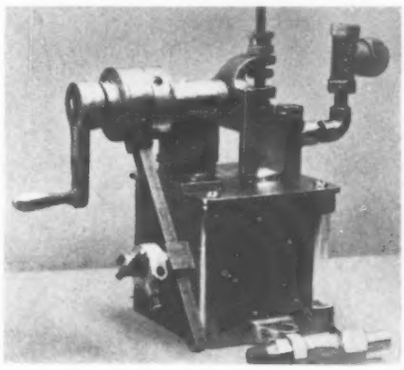


Single ram action of a mechanical type baler is combined with powerful hydraulic action in this press, which reduces scrap to 5x5x13-inch bales

Cam Type Drive Improves Lubrication Control

Hills-McCanna Co., 2349 Nelson avenue, Chicago, has designed a new driving mechanism in connection with its line of lubricators, which now may be obtained either with this new mechanism or with the ratchet type of drive. The lubricator shown in the accompanying illustration is equipped with the new mechanism. This comprises a right hand member which is attached to the standard for the purpose of holding the crankshaft when on the back stroke, and a left hand member which is attached to the driving rod operating the crankshaft on the forward stroke. In operation spring-held rollers in the housing bear against and work with the crankshaft.

The drive permits attachment to high-speed driving arms in any position within the arc of a complete circle. It is said to give the lubricator greater speed in oil delivery when and where needed. Parts are of hardened steel and are packed in grease to insure trouble-free operation. The device is interchangeable with the ratchet drives. Another new feature embodied in these new lubricators is the charging arm or crank shaft used to flush out cylinders when starting up or to increase flow when the lubricator is in operation.

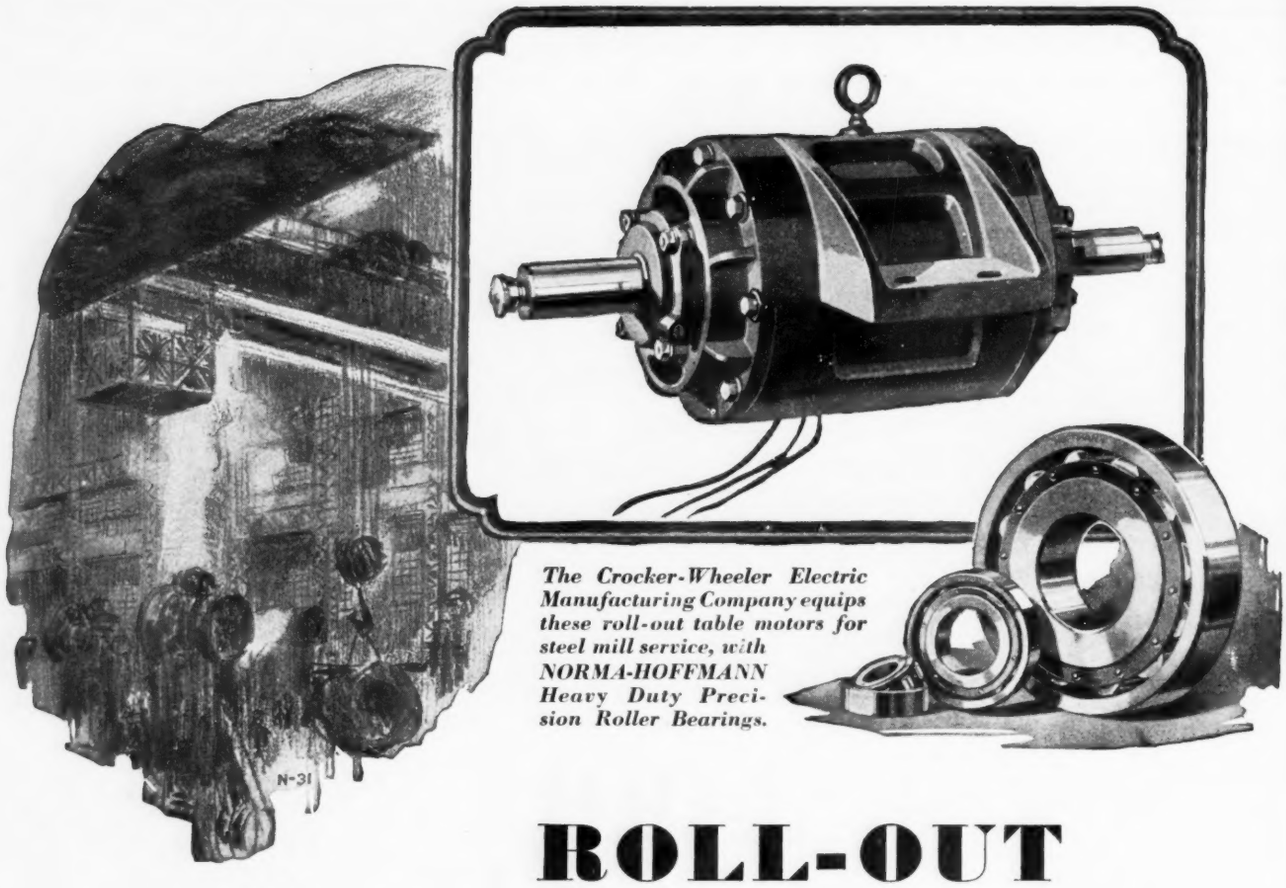


Increased speed of oil delivery results from cam-type lubricator control

New Projection Attachment Simplifies Weighing

Howe Scale Co., Rutland, Vt., announces an attachment for heavy-duty scales, which by means of a system of optical projection and magnification, makes quick, accurate direct reading of weights possible. This device is designed particularly for industrial use. It can be applied to any built-in type of beam scale from 1000 pounds upward, and dial scales can also be converted to the use of this device merely by replacing the dial head with standard beam fixtures supplied with the attachment.

The attachment consists of a metal case, proportioned to fit under the outer end of the scale beam and rest-



The Crocker-Wheeler Electric Manufacturing Company equips these roll-out table motors for steel mill service, with NORMA-HOFFMANN Heavy Duty Precision Roller Bearings.

ROLL-OUT TABLE MOTORS

for steel mill service

Write for the Catalogs. Let our engineers work with you

TWIN PRECISION

WHERE loads are heaviest and service hardest—where dependability must be had regardless of severe conditions—engineers and designers in ever-increasing numbers are turning to NORMA-HOFFMANN Precision Roller Bearings for the stand-up-ability they must have. Their rugged reliability is a distinct advantage where failure would be most costly.

"NORMA-HOFFMANN"

PRECISION BEARINGS

BALL, ROLLER AND THRUST

NORMA HOFFMANN BEARINGS CORPORATION STAMFORD CONN., U.S.A.

Attachment flashes direct readings of weights on industrial scales

ing upon the frame supporting the beam assembly. A connecting rod from the free end of the beam passes through the top of this case and is connected by a flexible strap to a drum which is a part of a counterweighted lever carried on a ball bearing pivot. The outer end of this lever carries a slotted segment, in the slot of which is mounted a precision scale of transparent material, with clear divisions and figures and opaque background.

Behind this scale, or negative as it is called, there is an electric light and in front of it a projection lens, this simple optical system being in fixed location to throw a greatly magnified image of a small portion of the scale on a ground glass screen marked with an indicating point. This screen is about 2½ x 4½ inches, and is mounted on the case in a position most convenient for reading. In operation, the scale comes to instant balance and the weight is flashed on the screen in illuminated figures ½-inch high. Readings can readily be made from a considerable distance in any light, or even in the dark, and there is entire absence of parallax.

Wide application of this device to conveyor scales is being made, on account of the fact that accurate weights can be read easily at full conveyor speed.

◆

Control Insures Protection with Full Load Starting

Monitor Controller Co., Baltimore, has brought out an oil-immersed starter which permits across the line, full-voltage starting, at the same time giving overload and low-voltage protection. This starter, shown in the accompanying illustration, consists of a standard magnetic contactor mounted on a panel with a thermal relay, the assembly being enclosed in an oil-tight box. The oil level is regulated so as to completely immerse the contactor and the contacts of the relay, but leaving the thermal elements above the oil line.

This starter gives positive protection to polyphase and single-phase motors both while starting and while running. It permits full-voltage, full-current and full-torque starting and yet protects the motor from harmful operating overload. In addition to the usual overload protections, it will disconnect the motor in case the voltage drops below normal to an excessive degree. The starter also will prevent damage to polyphase motors from running single-phase, in case one of the phases goes dead, which otherwise would overload one of the phases.

◆

Tiering Truck Is Designed for Small Plant Use

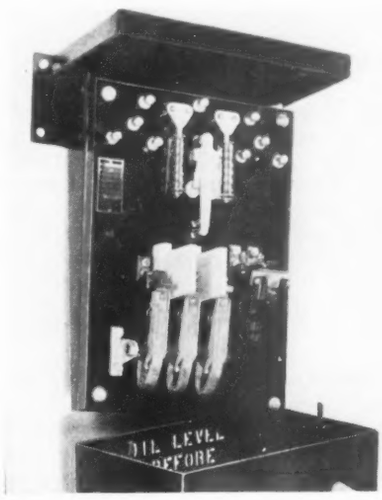
Elwell-Parker Electric Co., 4205 St. Clair avenue, Cleveland, has developed a small-sized tiering truck which is especially suited for use in small plants, or under other conditions which are characterized by small unit loads to be stacked. The truck, shown in the accompanying illustration, is only 29 inches in width and therefore is well suited to operation in the narrow aisles common in the average shop, store, or warehouse.

The truck has a capacity of 3000 pounds. Its 18 x 41-inch platform stands 7 inches high and will lift a 24 x 30 x 48-inch skid or container to a height of 63 inches. Overall height is 83 inches to clear 7-foot doorways or box car entrances. The system of lift is by worm gear speed reduction to cables that elevate the cantilever platform.

The drive axle is of the full floating silent worm gear type, fitted with 20 x 5-inch pressed-on tires. The trail axle beneath the 7-inch high platform is fitted with 6½ x 4-inch tires. All four wheels are steered by means of automobile type ball and socket lever mechanism.

Operation in narrow aisles is possible by this small tiering truck

The truck may be fitted with battery or gas-electric power unit, either being capable of performing a full day's work.



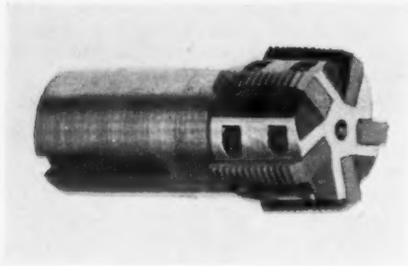
Oil-immersed control unit permits across the line starting

◆

Inserted Blade Pipe Taps Give Chaser Economy

National Acme Co., 170 East 131st street, Cleveland, is marketing a line of inserted-blade pipe taps of the nonadjustable variety, one of which appears in the accompanying illustration. These tools are designed particularly for taper tapping pipe in cases where operating space is limited, where for other reasons collapsing taps cannot be used to advantage, and where a tap of unusual strength is demanded. The inserted chasers are said to insure cutting edges of the correct degree of hardness.

The tool consists of a slotted steel body with integral shank, a set of chasers, and chaser retaining screws. When the chasers are locked in their slots by means of the set screws, the assembly becomes practically a solid unit. Ample support is afforded to the chasers, there is plenty of room for chips, and coolant has ready access to the cutting points. It is pointed out that the solid lockup and gen-



Inserted chasers give economy in pipe tapping operations

erous contact between chasers and body give these tools heat conductivity equal to that of a solid tool, which allows to high speed tapping and gives long chaser life.

This line of taps comprises six sizes, capable of tapping pipe from 1 to 3 inches in diameter. Any chaser is interchangeable with chasers in other taps of the same size, which allows the utilization of incomplete sets. This is a distinct economy feature where a number of the taps are in use.

◆

Small Drying Machine Aids Blue Print Production

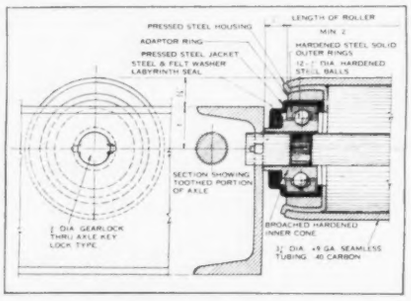
C. F. Pease Co., 813 North Franklin street, Chicago, is manufacturing an inexpensive dryer for moderate size blue prints, negatives, blue line and brown line prints up to 24 inches wide. Prints are fed into the dryer over a brass scraper rod and then up an inclined feed table which drains the water away from the drying drum and prevents steam pockets and creased prints. All surplus water is collected in an adjustable drip pan located directly beneath the feed table. After drying, the prints are automatically returned into an adjustable tray at the front of the machine. In case especially long prints are being run, this tray can be removed.

Quick finishing of prints is insured by small drying unit

◆

Roller Conveyor Is Built for Severe Service

Mathews Conveyor Co., Ellwood City, Pa., has developed a heavy duty roller conveyor for foundries and other plants where severe service is encountered. Features of the new units include gear teeth on inside of cone and knurling on the axle to prevent the cone from turning; an upset key fitting into a corresponding slot in the frame rail which prevents the axle from turning; special, dust-proof, steel and felt washer labyrinth to protect the bearings from sand and dust; heavy duty solid ball races; heavy gage 0.40 carbon seamless steel tubing and frame rails of angle or channel iron construction.


PRESSED STEEL HOUSING
ADAPTOR RING
PRESSED STEEL JACKET
STEEL & FELT WASHER LABYRINTH SEAL
LENGTH OF ROLLER
HARDENED STEEL SOLID OUTER RINGS
DIA. HARDENED STEEL BALLS
SECTION SHOWING TOOTHED PORTION OF AXLE
DIA. GEARLOCK THRU AXLE KEY LOCK TYPE
BROACHED HARDENED INNER CONE
DIA. 9 GA. SEAMLESS TUBING .40 CARBON

Design of heavy duty roller meets rough service conditions

Bearings are of the detachable, hardened cone type with outer rings. Two general classes of the conveyor are made. In the lighter type, 12 hardened steel balls of ⅜-inch diameter are used, while in the heavier model 13 balls of the same type but ½-inch diameter are specified. In both types, balls are assembled in pressed steel jackets. The gear lock cone and special washer are added features. Bearings may be packed in grease, or for severe service bearings and axles may be provided with fittings to allow grease gun lubrication.

Axles are of cold rolled steel, ¾-inch diameter in the lighter type and 1 3/16-inch diameter in the heavier model. Both types are equipped with either notched ends or the keylock previously mentioned. Each roller in the lighter type has a continuous load capacity of 600 pounds and in the heavier, 2000 pounds.

Frames are angle or channel iron of proper weight to suit the material conveyed.

◆

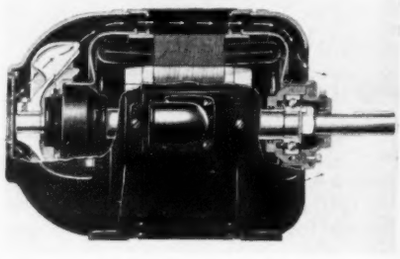
Double Frame Construction Keeps Motors Cool

General Electric Co., Schenectady, N. Y., has designed a line of dust-tight, totally enclosed fan-cooled induction motors suitable for use under hazardous dust conditions. The motors, one of which is shown in the accompanying illustration, provide a totally-enclosed unit of the same mounting dimensions, rating for rating, as the standard open type, horizontal, general purpose motor, in sizes ranging from ¾ to 50 horsepower, in popular speeds.

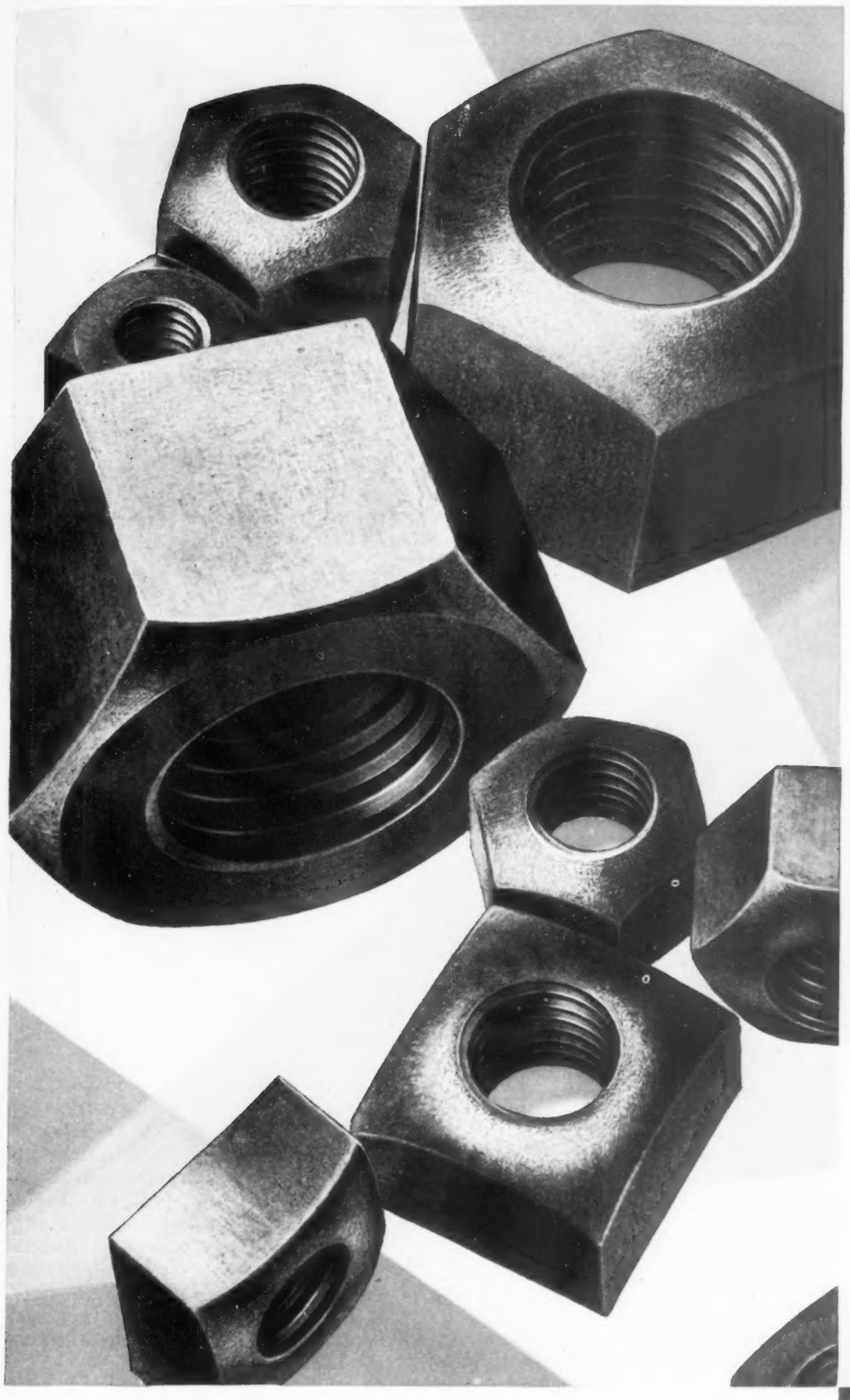
Size and weight are minimized in the new design. The single ventilating fan is located outside the motor enclosure on a short shaft extension on the end opposite to that of the drive. A double frame provides passages for the cooling air. All enclosing parts are of substantial steel or cast-iron construction. The fan is housed in a cast-iron enclosure with a heavy screen guarding the large opening for the intake. The air is blown through the ventilation passages and out the drive end.

Disassembly or reassembly of the motor is facilitated by the simplified mechanical construction. Dust-tight, cartridge-type ball bearing housings are a further aid in this respect and permit removal of the rotor without exposing the bearings to dust or dirt.

American Chain Co. Inc., has provided group life insurance amounting to $663,000 for employes of the Highland Iron & Steel Co., Terre Haute, Ind., a subsidiary, under a contract with the Equitable Life Assurance Society. This is in addition to one under which 4300 employes of the chain company and other subsidiaries are covered for approximating $3,605,000.



Enclosed fan-cooled motor is safe under hazardous dust conditions



LAMSON accuracy and strength is always certain

From the time the steel is checked by our metallurgists in our laboratories, on through the varied operations necessary to make bolts and nuts to Lamson & Sessions' standard of quality, constant vigilance over every step in manufacture is maintained.

Batteries of automatic tapping machines of the latest type are operating under the keen eyes of skilled men whose sole job for many years has been to see that Lamson nuts have accurate, sharp, clean threads that meet specifications. Whether you buy hot pressed, cold punched or semi-finished nuts the Lamson standard of quality has been attained before they are shipped.

Naturally, such products have acquired an enviable reputation for quality, which Lamson & Sessions will always maintain.

Prompt shipments out of stock can be made at all times.

LAMSON & SESSIONS CO.

CLEVELAND, OHIO

Plants at Cleveland and Kent, Ohio; Chicago and Birmingham

Personals

(*Concluded from Page 22*)

ago when Portage Silica Co. and other foundry sand producers merged. Mr. Klooz had been general manager of the Portage company for many years.

□ □ □

Albert Tencate, 85, was honor guest at a dinner Jan. 19 tendered him by officials of the Phoenix Iron Co., Phoenixville, Pa., in recognition of his 71 years continuous employment.

□ □ □

Russell Horne, who has been appointed manager of the Stark rolling mill division at Canton, O., of Republic Steel Corp., Youngstown, O., as noted in STEEL of Jan. 22, succeeds E. G. Fenton, resigned.

□ □ □

S. T. Nelson has resigned, effective May 1, as works manager of the Sullivan Machinery Co., Elkhart, Ind., after 45 years service. Patents on 28 of his inventions have been assigned to the company. He will devote his time to inventive activities.

□ □ □

Allen Nelson is now a director of Logansport Machine Co., Logansport, Ind., to succeed the late J. P. Henderson. Other directors re-elected are: F. B. Wilkinson, president; Roy R. Johnson, vice president; B. F. Long, secretary-treasurer, and Roy J. Johnson, Charles Richardson and S. O. Cook.

□ □ □

J. Roy Tanner, since 1916 vice president and general manager of Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, has been elected president, to succeed the late Charles A. Anderson. George J. Stuart, formerly manager of production, succeeds Mr. Tanner as vice president and has also been elected director.

Mr. Tanner became an engineer for the company in 1901, was appointed chief engineer in 1905, and was promoted to general manager in 1911. In 1916 he was elected vice president and continued as general manager.

□ □ □

Carl W. Meyers, superintendent of bar mills at McDonald, O., of Carnegie Steel Co., Pittsburgh, has resigned effective Feb. 1. He will go to Chicago to become superintendent of bar mills for Republic Steep Corp. Mr. Meyers became identified with the McDonald works 13 years ago when the plant was built. He was assistant superintendent for six years before being placed in charge of the works.

Walter D. Griffith, assistant superintendent, has been appointed superintendent to succeed Mr. Meyers. He is a son of the late A. M. Griffith, formerly general superintendent for Carnegie Steel in the Youngstown district.

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Harold S. Falk, vice president and works manager of Falk Corp., Milwaukee, has been appointed a member of the Wisconsin state board of vocational education.

□ □ □

Edward N. Hurley Jr., president of the Electric Household Utilities Corp., Chicago, has been re-elected president of the American Washing Machine Manufacturers' association.

□ □ □

C. E. Tompkins, formerly with the Westcott Chuck Co., Oneida, N. Y., has been appointed sales manager of David Maydole Tool Corp., Norwich, N. Y.

L. E. Block
Reproduction of a recent charcoal drawing of the chairman of the Inland Steel Co., Chicago

□ □ □

George F. Libbey has been promoted from assistant sales manager to director of sales of the Master Lock Co., Milwaukee, manufacturer of laminated steel padlocks. He has been with the concern six years.

□ □ □

Dr. Robert C. Williams has been appointed a member of the technical staff of the Battelle Memorial institute, Columbus, O. He is a graduate of Oberlin college and for two years past has been engaged in an industrial rubber research.

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O. T. Fell has resigned as assistant general counsel for Republic Steel Corp., Youngstown, O. He had been with the company and its predecessor, Republic Iron & Steel Co., for a long period.

□ □ □

H. W. Caldwell, of Cleveland, was re-elected president of Sterling Grinding Wheel Co., Tiffin, O., Jan. 14. A. A. Curtis, of Cleveland, was made vice president; Arthur E. Tulk, of Tiffin, treasurer, and J. R. Miller, of Cleveland, secretary.

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J. Lester Perry, Worcester, Mass., district manager of American Steel & Wire Co., Cleveland, has been elected president of the Worcester chamber of commerce, to succeed Clifford S. Anderson, secretary and general counsel of Norton Co., Worcester.

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L. H. Clouser, formerly instructor of sanitary engineering at Penn State college, State College, Pa., is now affiliated with the sanitation department of the Hardinge Co., York, Pa. He formerly was identified with William Dechant & Sons, Reading, Pa.

□ □ □

Isaac M. Scott, former president of Wheeling Steel Corp., Wheeling, W. Va., has been re-elected president of the West Virginia Manufacturer's association. F. A. Hanlin, vice president of Weirton Steel Co., Weirton, W. Va., was elected a vice president.

□ □ □

R. K. Rothrock, with headquarters at 2204 Jefferson avenue, New Orleans, has been appointed to represent Chicago Pump Co., Chicago, in that territory.

J. M. MacCrea, with headquarters at 153 Oakland street, Syracuse, N. Y., has been appointed to represent the company in Syracuse district.

□ □ □

Thomas H. Beaulac, for the past year in charge of the foundry operated by the Springer Lock Mfg. Co. Ltd., Belleville, Ont., has resigned to become foundry superintendent for Chicago Pneumatic Tool Co., Franklin, Pa. Prior to his connection with the Springer company Mr. Beaulac was associated with the Worthington Pump & Machinery Corp., Harrison, N. J., and with the Franklin Foundry Co., Franklin, Pa. He held the latter position six years.

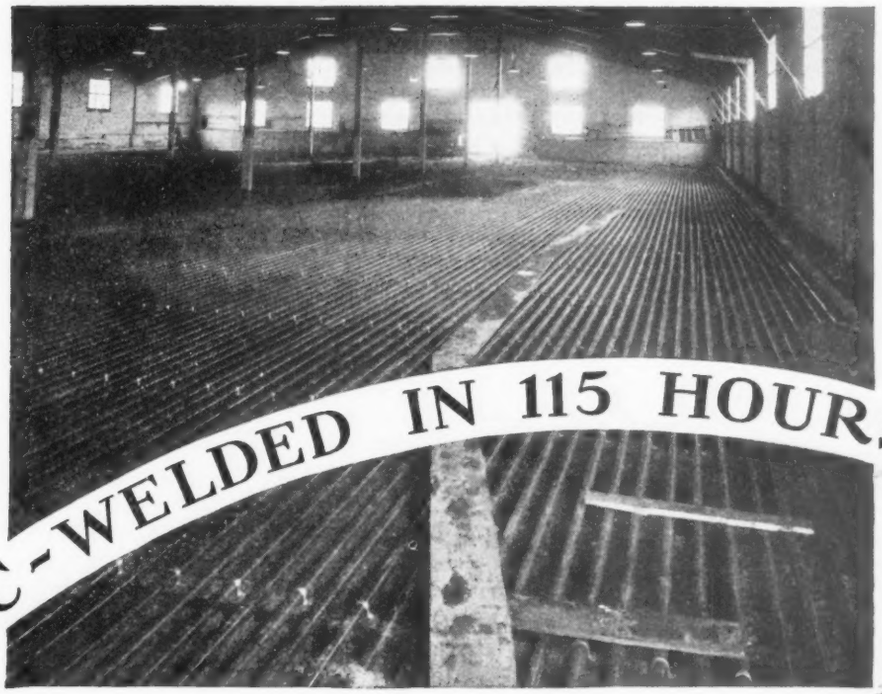
□ □ □

W. J. Crowe and Louis A. Deesbe have become affiliated with Freyn Engineering Co., Chicago, and will be located near Moscow, Russia, in connection with that interest's steel mill project in Russia.

Mr. Crowe until recently was rolling mill superintendent for Scullin Steel Co., St. Louis, but prior to about a year ago was superintendent of the rolling mill at the Minnequa plant of Colorado Fuel & Iron Co., Pueblo, Colo.

Mr. Deesbe resigned Jan. 1 as chief testing engineer at the Minnequa plant of the Colorado company.

7½ MILES
of Artificial-Ice Piping—



ARC-WELDED IN 115 HOURS

The above illustration shows the arc-welded piping system laid out on the floor of the new Kingston Curling Club.

KINGSTON Curling Club is now sporting on one of the largest artificial ice rinks in Canada. The freezing system contains *7½ miles* of piping. It was entirely fabricated by *arc-welding*—and completely installed in 115 working hours!

Over 2000 Welds

Over 2,000 welds were done by one Wilson Type 200 Amperes single-operator machine, with Grade No. 17 Wilson "Color-tipt" Wire. Much of the work required overhead welds.

Leaks and Repairs Eliminated

By selecting arc-welding—which made it unnecessary to cut away metal for threading—it is estimated that from 6,000 to 8,000 possible leaks were eliminated, and that the life of the pipes was increased 20 to 50 per cent. In addition, there will be practically no maintenance cost, because the welded joints are as strong as the pipe walls themselves, and become an integral part of the piping.

Close-up view, showing how the two 95-foot headers and 250 nipples were joined by arc-welding.

WILSON WELDER & METALS CO. INC., 24 WILSON BLDG., NORTH BERGEN, N. J.

WILSON

Whatever YOUR industry
—whatever YOUR
metal-joining problem
—investigate
ARC-WELDING

Steel Angles from Chicago

(*Concluded from Page* 25)

omies and efficiency obtained by the roads gives assurance that the carriers soon will benefit in revenues and earnings, once the tide of the business depression is clearly turned. Facilities, equipment and financial setups are the best in the roads' history.

Consolidation May Bring Fewer But Better Buyers

Steel sales departments, eager for railroad orders, feel that the railroad consolidation plans for a while naturally will make the carriers wary about plant and equipment betterments, except for urgent needs.

On the other hand, eventual advantage is seen in the mergers of roads into large systems. It is felt purchasing of materials will be in strong hands, further economies in railroad operations may be assured, and the roads finally will become fewer but better steel customers.

Possibilities are that engineering development may strengthen as an outcome of competition between the larger and stronger consolidated railroad systems. From merely consumers of the unchanging staple steel products, likelihood of re-awakened interest is seen for special steels by the carriers.

First, there may be a general realignment of steel company customers, and an ultimate exchange of railroad business by steel producers.

Farm implement makers still are guessing as to production schedules for the next few months. The prospects are not bright in view of heavy stocks of finished equipment in the hands of a number of the manufacturers.

The larger companies, nevertheless, are preparing for a real campaign to stimulate sales, particularly farm and industrial tractors. This is indicated by announcements recently by several companies of new tractor and implement models.

◆

International Harvester Co. is adding two new tractor models of the track laying-type. One model of 15 to 20 horsepower size already is in production on a limited scale, and output is expected to start shortly on the other size, which is 15 to 30 horsepower.

These two models primarily are for farming and road building, and in view of the $800,000,000 federal road paving program, the outlook is favorable for their production in 1931. The company is reported to have spent more than $2,000,000 in developing the new tractor.

The further development of track-laying tractors reflects the growing popularity of the crawler type. Caterpillar Tractor Co., Peoria, Ill., owns more than 430 patents on its tractors, tractor parts, tools and tool-making machines, some of which will expire soon.

Tractor and implement plants still are limping in production with short shifts and reduced forces, except for a few plants. Of the four John Deere works at East Moline, Ill., only one is at capacity, while the others are down. The Deere tractor wheel plant at Waterloo, Iowa, is going better than 85 per cent.

Oliver Farm Equipment Co.'s Battle Creek, Mich., works is near capacity, while more than 75 per cent operations are maintained at the Charles City, Iowa, works. At South Bend this company resumed with a limited force late last month after six weeks of idleness. Minneapolis-Moline Power Implement Co. is operating its Minneapolis plant at four to five days, but is not crowding production.

◆

J. I. Case Co., Racine, Wis., has 2700 men working at Racine and the company's Emerson-Brantingham Co. works at Rockford, Ill., against nearly 3500 men for the two plants a year ago. The company's foundry melt recently was increased from 85 to 100 tons of castings daily.

International's schedules vary at different plants, the average being 25 to 30 per cent under a year ago. Existing schedules are in part to keep organization together and to provide employment. Announcement is that the International plants will be much under 1929 and first quarter, 1930, until at least the final quarter of this year.

Vexing problems have been faced by several of the implement works because of heavy accumulations of finished stocks, and the large amount of unreceipted accounts. The slow collections resulted in part from generous credit terms.

Russian Tractor Orders Yield Little Real Cash

The Russian tractor orders also have not been overly helpful, as to immediate cash. These were accepted on terms of 50 per cent cash and the remainder over a three-year period, which set up relatively little cash in consideration of the size of the orders. For the most part, the Russian down payments were consumed at once by labor, materials and part of overhead.

Oliver, and also Advance-Rumely Co., LaPorte, Ind., through reorganization process, have been placed on firm ground. The plan, which involved the appointment of C. R. Messinger, head of Chain Belt Co., Milwaukee, as president, has been approved by directors and stockholders. Accounts receivable had run into large figures, and partly were an outcome of conditions in drought-stricken areas.

Final approval is expected to be given the Advance-Rumely reorganization, which has been accomplished through stock conversion under Indiana corporation laws. Rumors of merger of that company with various implement concerns have been repeated in the last year or more.

New Type Tank Cars Reduce Losses to Pipe Lines

Competition of cross-country pipe lines with the railroads apparently does not dim fundamentally the developments in tank car building. General American Tank Car Corp. and American Car & Foundry Co. are among the builders meeting pipe line competition, as they have been reported developing a tank car with capacity of 22,000 gallons, compared with about 10,000 gallons in general tank car usage now.

General American has been conducting a campaign to inform shippers that many of the chemical products, such as anhydrous ammonia, a refrigerant now generally shipped in steel drums, may be handled in tank cars designed for that purpose. A practical glass-lined refrigerator car for shipping milk is popular in the dairy industry.

◆

The company's research has brought out a tank car claimed to be powerful enough to ship any kind of gas, including the transportation of helium gas. The tank cars built to carry helium gas for the navy each weigh 200,000 pounds, and are said to be capable of transporting 2000 pounds of helium under a pressure of 2000 pounds, and also are used for shipping carbonic gas.

General American operates more than 40,000 cars, leased to individuals and corporations, and, with capacity of more than 2000 tank cars annually, can build more than half of the normal yearly output of steel tank cars.

Soviet Mines Less Ore

Russian manganese ore, which American producers of manganese would have barred and American steel producers would use, is being mined at a slower rate than prewar, according to the department of commerce. In the first 10 months of the soviet fiscal year ended Oct. 1, 1930, output of manganese ore was 807,132 metric tons. This compares with 899,969 tons in the fiscal year ended Oct. 1, 1929, and 1,192,790 tons for the calendar year 1913.

January Steel Gain Is Subnormal

Operating Improvement Is Less Than Year Ago, and Slowing Down—West Is Fearing Effect of Mild Winter—Fewer Shapes Placed—Prices Untested

FURTHER slight improvement in steelworks operations has lifted the industry's rate one point this week, to about 47 per cent, but in spite of the noteworthy comeback immediately after New Year and the gains registered in each succeeding week the expansion in production in January does not quite measure up to the seasonal average.

January ingot production is estimated at about 45 per cent of capacity, compared with 38 per cent in December. One year ago the betterment from December to January was from 59 per cent to 70, three years ago from 66 per cent to 81, and four years ago from 82 per cent to 89. Two years ago there was a decline from 85 per cent to 84.

For several weeks rates of such important districts as Pittsburgh and Chicago have held closely to 45 per cent, gains being negligible. Youngstown has pushed up to 48-50 per cent, but the advance is slower. Eastern Pennsylvania is off one point this week, to 46 per cent. Cleveland, Birmingham and Buffalo, now at 50, 60 and 54 per cent, respectively, have fluctuated, improvement dominating.

Steel producers are no less convinced that they touched bottom during the holidays, but as the rising curve of production has tended to flatten they have fewer illusions concerning the width of the valley before them. It is evident that the expansion normally generated by the release of track material after Jan. 1 has failed expectations and that the takings of other outlets have little more than balanced the holdups issued late in December.

Most steel market news this week is cheerless. Automotive users of sheets, especially the higher finishes, last week issued their releases for February shipment and if the volume reported by Pittsburgh and northern Ohio mills is a reliable indicator there will be little improvement in the automotive situation next month. However, sheet demand from miscellaneous consumers, especially stamping and enameling interests, is better.

Structural steel awards, which have been running ahead of the comparable period of 1930, fell behind this week with a total of 19,623 tons, contrasted with 31,592 tons last week and 44,063 tons a year ago. Nine thousand tons for an apartment house in New York was the largest purchase. Pending work is lighter.

A new disturbing factor is the mild winter, which although a boon to the unemployed has in effect prolonged the drought in the western agricultural states and is now threatening winter wheat. Wire producers attribute light jobber buying to fears of further restriction in farm purchasing power, and implement manufacturers are holding down their schedules.

Steel pipe continues moderately active. For a line from Kettleman Hills to Los Angeles the Southern Fuel Co. is considering 50,000 tons. A nebulous project described as a Far West line involves 30,000 tons. Columbia Gas & Electric Co., which recently placed 30,000 tons for a gas line from western Pennsylvania to Washington, may add 20,000 tons in April. Standard Oil of New York requires 5100 tons for a New England gasoline line.

Two western carriers have bought 30,000 tons of rails at Chicago. Nickel Plate is inquiring for 20,000 tons of rails. Ten thousand tons of track fastenings have been distributed at Chicago, with twice that amount still on inquiry.

Plate requirements include 2000 tons by the American and Lima Locomotive Cos. for the 50 New York Central locomotives, 4000 tons for Sinclair Oil Co. projects at Marcus Hook, Pa., Wellsville, N. Y., and Houston, Tex., and 1500 tons placed at Chicago for storage tanks, with 8000 tons pending.

Shipments of pig iron are moderately higher in most districts; otherwise, raw materials are slow. Prices generally are unchanged, except scrap, which is slightly softer in some districts.

Finished steel prices are not under pressure, owing to lack of demand, and STEEL's market composite continues unchanged at $31.73.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Jan. 28, 1931)	**$31.73**
Last week (Jan. 21, 1931)	**31.73**
One month ago (December, 1930)	**31.74**
Three months ago (October, 1930)	**32.26**
One year ago (January, 1930)	**35.56**
Ten years ago (January, 1921)	**51.98**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Jan. 28, 1931	Dec. 1930	Oct. 1930	Jan. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	18.76	19.36	20.76
Basic, valley	17.00	17.00	17.00	18.50
Basic, eastern del. eastern Pa.	17.50	17.50	17.50	19.20
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.46	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.70
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	18.26	18.26	19.26	21.56
Malleable, valley	17.50	17.50	17.80	19.00
Malleable, Chicago	17.50	17.00	17.50	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.83	19.13
Ferromanganese, del. Pittsburgh	89.79	93.29	103.79	104.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.50	2.50	2.60	2.55
Connellsville foundry, ovens,	3.25	3.50	3.50	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	30.00	30.50	31.00	33.80
Sheet bars, open-hearth, Pitts.	30.00	30.50	31.00	33.80
Billets, open-hearth, Pittsburgh	30.00	30.50	31.00	33.80
Wire rods, Pittsburgh	35.00	35.50	36.00	40.00

	Jan. 28, 1931	1930 Dec.	1930 Oct.	1930 Jan.
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.60	1.60	1.90
Steel bars, Chicago	1.70	1.70	1.70	2.00
Steel bars, Philadelphia	1.94	1.89	1.89	2.17
Iron bars, Chicago	1.70	1.70	1.75	2.00
Shapes, Pittsburgh	1.60	1.60	1.60	1.90
Shapes, Philadelphia	1.81	1.76	1.76	1.91
Shapes, Chicago	1.70	1.70	1.70	2.00
Tank plates, Pittsburgh	1.65	1.60	1.60	1.90
Tank plates, Philadelphia	1.80½	1.80½	1.80½	2.05
Tank plates, Chicago	1.70	1.70	1.70	2.00
Sheets, blue anl., No. 13, Pitts.	2.05	2.05	2.15	2.30
Sheets, black, No. 24, Pitts.	2.35	2.35	2.40	2.70
Sheets, gal., No. 24, Pittsburgh	2.90	2.90	3.00	3.35
Sheets, black, No. 24, Chicago	2.50	2.50	2.60	2.90
Sheets, blue anl., No. 13, Chicago	2.20	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.05	3.15	3.20	3.55
Plain wire, Pittsburgh	2.20	2.25	2.30	2.40
Wire nails, Pittsburgh	1.90	1.90	2.00	2.35
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25
SCRAP				
Heavy melting steel, Pitts.	13.00	12.75	14.80	16.55
Heavy melting steel, eastern Pa.	10.50	11.00	12.00	14.50
Heavy melting steel, Chicago	10.00	10.00	11.55	12.65
No. 1 wrought, eastern Pa.	13.00	13.50	14.25	15.25
No. 1 wrought, Chicago	9.50	10.00	10.95	13.40
Rails for rolling, Chicago	13.00	13.00	14.10	14.65

Sheets

Specifications from Automotive, Implement and Electric Industries Improve Moderately

SHEET PRICES, PAGE 69

Pittsburgh—Improvement in sheet business is slight. The tone of the market has bettered moderately as the result of more liberal specifications from the automotive, farm implement, electrical manufacturing and electric refrigerator industries. The gain in all cases has been small but it is believed that better demand is in sight for the near future. Some rush orders are being received and practically all purchases represent early requirements. Automotive demand is spotty and rather disappointing. Prices show more stability than has been looked for in view of current operations. Producers continue to quote 2.35c for black sheets, 2.90c to 3.00c for galvanized, 2.05c for No. 13 blue annealed, 1.90c for blue annealed plates, and 3.30c for autobody. Mill operations are unchanged at around 40 per cent.

New York—Sheet specifications are better and the stronger tone noted recently in galvanized sheets continues. This grade now appears firm at 3.00c, Pittsburgh, to the general trade, with the price to jobbers unchanged at 2.90c. Black sheets are 2.35c, Pittsburgh; No. 10 blue annealed, 1.90c; and No. 13 blue annealed sheets are 2.05c.

Philadelphia—Sheet demand has not registered any further expansion and competition again is keen. Prices remain firm except in two instances where large amounts were involved.

Youngstown, O.—Independent sheet operations have increased to about 48 per cent for the district. New business has gained slightly, chiefly for common grades. The expected influx of specifications for automotive sheets has not materialized. Specifications for full-finished sheets from miscellaneous consumers are fairly liberal. Prices are firm. Common black are bringing 2.35c, Pittsburgh; blue annealed 1.90c to 2.05c; galvanized 2.90c to 3.00c, and autobody 3.30c.

Cleveland—Sheet buying continues on a small scale. Specifying is fairly steady in certain directions, such as by the Fisher Body Co. and one or two other large local and nearby users. Chevrolet bodies are being produced at the rate of 16,000 to 18,000 weekly. Electric refrigerator and stove manufacturers are increasing sheet tonnages. General Electric Co. at Erie, Pa., purchased a fair amount of single pickled 1-pass black sheets. A Dayton, O., maker of electric refrigerators has been buying enameling stock. Some reports are heard regarding a possible price advance Feb. 1, purchasing agents being advised by salesmen to buy now. Prices hold at 2.35c, Pittsburgh, for black; 2.90c to 3.00c for galvanized; 3.30c for autobody and 3.60c for metal furniture sheets.

Cincinnati—Production of district sheet mills is somewhat lower, reflecting lighter automotive specifications. Improved barge transportation to New Orleans may open new markets on the Pacific coast through all-water movements.

Chicago—A large percentage of sheet capacity in the Chicago district was idle until the middle of the week due to light orders in some sizes and gages which made it difficult to schedule a full week's operation. The operating rate for the districts is 35 to 40 per cent. Producers say that concessions have disappeared although No. 24 galvanized and No. 24 black now are quoted at flat mill prices of 3.00c and 2.45c, respectively. Orders are insufficient to give prices a test. Hopes are held for active southwestern business within 30 days.

St. Louis—Sheet specifications have picked up and a good volume of small orders are being booked. The leading producer of sheets has increased operations.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c
Philadelphia, delivered	2.64c
Gary, Indiana Harbor	2.45c
Chicago, delivered	2.50c
Birmingham, base	2.50c to 2.60c
St. Louis, del.	2.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.65c to 2.75c
Gary, base	2.75c to 2.85c

GALVANIZED NO. 24

Pittsburgh, base	2.90c to 3.00c
Philadelphia, delivered	3.19c
Chicago, delivered	3.05c
Gary, Indiana Harbor	3.00c
Birmingham, base	3.05c to 3.15c
St. Louis, del.	3.35½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.05c
Chicago, district mills	2.15c to 2.25c
Chicago, delivered	2.20c to 2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.34c
Birmingham	2.20c to 2.25c

BLUE ANNEALED SHEETS NO. 9-10

Pittsburgh, base	1.90c
Chicago, district mills	2.00c to 2.10c
Chicago, delivered	2.05c to 2.15c
Philadelphia, delivered	2.19c
St. Louis, delivered	2.35½c
Birmingham	2.05c to 2.10c

AUTOMOBILE NO. 20

Pittsburgh, base	3.30c

FURNITURE NO. 24

Pittsburgh, patent leveled	3.60c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	5.00c
Gary, Ind., base 10 cents higher.	
Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.05c and 2.15c
Galvanized wire	2.50c and 2.60c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c to 2.30c
Spring wire	3.20c
Wire, delivered Detroit	2.50c
Nails, delivered Detroit	$2.35

Joliet, DeKalb, Wauegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c to 1.65c
Philadelphia, del.	1.80½c to 1.85½c
New York, delivered	1.98c
Boston, delivered	2.05c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.83½c
Lackawanna, N. Y., base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.10c to 2.20c
St. Louis, del.	1.95½c

Structural Shapes

Base, Pittsburgh	1.60c to 1.65c
Philadelphia, del.	1.81c
New York, del.	1.905c
Boston, del.	1.985c to 2.035c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c to 1.65c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coasts, c.i.f.	2.25c
Cleveland, base	1.65c to 1.70c
Philadelphia, del.	1.94c
New York, del.	1.98c
Boston, del.	2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.60c to 1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c to 1.75c
New York, delivered	1.98c to 2.08c
Philadelphia, delivered	1.94c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet	2.00c
Chi., rail steel	1.60c to 1.70c
Philadelphia, cut lengths	2.19c
Cleveland, cut lengths	1.95c to 2.05c

Cold-Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Cr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds.,sq.)	0.50
4600 .20 to .30 Mo.			

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.65c to 1.70c
Hot strip 6 1/16 to 24-in. Pitts.	1.55c to 1.60c
Hot strip, bands 6 in. and under, Chicago	1.75c to 1.80c
Do. 6 1/16 to 24 in.	1.65c to 1.70c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.25c to 2.35c
Worcester, 3 tons, over	2.50c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$46.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., Pittsburgh do, less carloads, 5 kegs or over, 2.65c; and less than 5 kegs, 2.80c.	2.40c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Specifications and Shipments Show Gain Over December—Prices Are Holding Firmly

BAR PRICES, PAGE 69

Pittsburgh—Shipments of steel bars continue well ahead of the poor December rate although little further increase is noted over activity of preceding weeks of this month. The market is well maintained at 1.65c on what little new business is appearing, with current tonnage insufficient to provide a test. Requirements of cold bar finishers are slow to expand and progressive improvement is lacking in demand from the automotive industry. Orders for practically all users are limited in size.

New York—Steel bar inquiry is showing little gain, with the market unchanged at 1.65c, Pittsburgh. Common iron bars are unchanged at 1.65c to 1.75c, Pittsburgh, with occasional shading of $1 a ton.

Philadelphia—Specifications for steel bars are substantially unchanged but do not show any further improvement. The price is unshanged at 1.65c, Pittsburgh, on new business.

Youngstown, O.—Whatever increase in the volume of steel bar shipments is noted here appears due largely to a slight gain in alloy steel bars. Both Carnegie and independent bar mills continue to operate at unchanged rates for the most part. Carnegie bar mills continue at 50 per cent of capacity, and the independents around 42 to 46 per cent. Bars are holding firmly at 1.65c, Pittsburgh.

Cleveland—Inquiry for merchant steel bars is fair. Forging interests and automobile parts manufacturers have specified in increased amounts. Outside mills selling in this territory have matched several instances of a local 1.70c base price. This base, however, continues quotable at 1.65c to 1.70c for both local and outside delivery. An automobile manufacturer in this territory has just issued good bar specifications, though its past month's output was scaled down considerably from earlier forecasts.

Chicago—Bar specifications are up without support from any single consuming group. Much concern is felt in implement quarters because of the mild weather which may make trouble for farmers. Miscellaneous manufacturing and road bulding machinery orders lead. One bar mill's shipping orders have gained more than 10 per cent in the last week. Mills are obtaining 1.75c, Chicago, only for spot mixed carloads, while the 1.70c carry-over governs much protected business from 1930. Large automotive parts makers in this district are planning to schedule heavier consumption next month and in March. Bar mill operations are 35 to 40 per cent.

Cold-Finished Steel Bar Inquiries Are Steady

Cold Finished Prices, Page 69

Pittsburgh — Cold-finished steel bar demand is steady at a rate slightly improved over that of December. Requirements of the automotive industry still are confined to small lots but with sustained improvement lacking. Specifications from other consumers also lack a marked upward trend. The market is steady at 2.10c, Pittsburgh, with some specifications applied against 2.00c contracts.

Tin Plate Specifications More Active in East

Tin Plate Prices, Page 69

Pittsburgh—Tin plate is in a steady market with specifications showing less improvement than had been noted during preceding weeks. Operations continue to increase at some mills although the average for the industry remains at 60 per cent or slightly higher. The price is $5, Pittsburgh, per base box. ,

New York—While there is little spot buying, tin plate specifications against contracts are coming out more freely. Export demand is slack, with the recently announced reduction in Welsh tin plate prices a factor in smaller American business.

Plates

Tank Work More Active—New Gas Line to Take 50,000 Tons—General Market Unchanged

PLATE PRICES, PAGE 69

Chicago—Plate mills are running barely 40 per cent but prospects are better in the oil fields. About 1500 tons have been closed for storage tanks and 8000 to 10,000 tons are on inquiry. The 200-mile, 24-inch gas line from Kettleman Hills to Los Angeles, Calif., is to be started in April by Southern Fuel Co. and will take 50,000 tons. Plate mills are quoting 1.70c, Chicago, for the specific work that is extended from 1930. Skelp shipments to Milwaukee from this district for pipe line production are virtually completed on pending orders.

New York—Although there are few sizable tonnages to afford a test, the plate market remains steady at 1.75c, Coatesville, Pa., on new business. Demand is spotty and eastern plate mill operations continue to average 45 to 50 per cent. Lack of railroad business is felt keenly. Tank inquiry is featured by 600 tons for work for the Standard Oil Co. of New Jersey at Hackensack, N. J.

Four thousand tons of plates will be required for the Sinclair Refining Co.'s recently noted expansion program at Marcus Hook, Pa., Wellsville, N. Y., and Houston, Tex. The American Locomotive Co. has placed 1600 tons of plates for 40 New York Central locomotives, with one Cleveland and two eastern mills. The Lima Locomotive Works placed 400 tons for ten New York Central locomotives with a Cleveland producer.

Philadelphia—Several large orders for plates were placed with eastern mills in the past week but the aggregate volume is unchanged. The price continues 1.70c, base, Coatesville, Pa., with concessions noted in a few instances in the past week.

Pittsburgh—New business in fabricated steel plate is light. Pending barge business involves no large lots and new inquiry is slow. Freight car activity also is quiet but plate producers look for considerable tonnage for line pipe work during coming months. Plates are quoted 1.65c, Pittsburgh, in the open market.

Washington—United States engineers at Louisville, Ky., will take bids Feb. 5 on 33 steel pontoons, 40 sections of steel pipe and 25 pressed steel flanges. Engineers at St. Louis take bids Jan. 28 on 22 steel dredge pontoons. Bids go in Feb. 12 at New Orleans on one steel

barge, 60 x 22 feet, 4 feet deep.

Cleveland—Fairly vigorous inquiry manifest late in 1930 apparently has abated with relatively few orders. Current orders are few and for small amounts. The price is firm at 1.65c, base Pittsburgh. Outdoor bridge and tank work has not been seriously hampered by inclement weather. Repairs on two lake freighters are going ahead at lower Lake Erie ports, incorporating a new feature as tank tops are electrically welded.

Contracts Placed

250 tons, approximately, two tanks for department of reclamation, Denver, for installation at Boulder, Colo., in connection with the government Boulder dam project, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

100 tons, or more, steamer hull for Hawkins Transportation Co., Portland, Oreg., to Barde Steel Co., Portland, through Albina Marine Iron Works.

Contracts Pending

1463 tons, 60-inch steel pipe for municipal water department, Boston. Bids to be opened Jan. 29.

600 tons, tank work at Hackensack, N. J., for Standard Oil Co. of New Jersey.

Scrap Institute Prepares for Third Annual Convention

Third annual convention of the Institute of Scrap Iron and Steel will be held at the Hollenden hotel, Cleveland, March 10, 11 and 12, according to Myron A. Cohen, Cleveland, chairman of the convention committee.

Benjamin Schwartz, director general of the institute, has prepared a program of practical value concerning costs in operating yards, preparation and handling of various scrap commodities and merchandising principles. In addition to the practical work of the convention, Mr. Schwartz has stated that he will introduce certain resolutions which for the first time will unite the scrap iron industry in defense of its interests.

The convention will elect nine new members to the board of directors to replace one-third of the board which will retire. New officers for the year will also be elected. All standing committees will hold sessions.

Ford Uses Canal Motorships

Ford Motor Co., Detroit is planning to operate a fleet of barge canal motor ships 300 feet long by 43 feet wide on the New York canal system between Buffalo and New York in 1931.

Railroads

Large Accessory Orders Just Ahead—Small Rail Orders in —Greece Wants 200 Cars

TRACK MATERIAL PRICES, PAGE 69

New York—Railroad demand for rolling stock continues listless. Few orders and inquiries are before the trade. Eearly action is expected by New York Central and Erie in placing track accessories. Tonnage will be about half placed by these railroads a year ago. The Rutland railroad is expected to inquire shortly for 500 tons of tie plates.

Norfolk & Western inquires for 2325 steel riser plates, bids to be opened at Roanoke, Va., Feb. 4.

Pittsburgh—Practically all leading railroads have closed on their annual rail and track material requirements. Only a few have inquiries pending. Central of New Jersey closed with eastern producers on spikes. Pennsylvania has issued instructions to its regular sources of supply to make preparations for producing tie plates.

Buffalo—Bethlehem Steel Co. has allocated some recent rail bookings to its Lackawanna plant and rail mills here operate double turn. This rate is expected for 30 days.

Cleveland—Nickel Plate is inquiring for 20,000 to 22,000 tons of rails and several hundred tons of tie plates, spikes, nuts, bolts, etc.

Chicago—Two western railroads bought a portion of their 1931 rail needs. These with miscellaneous switch and industrial orders, brought 30,000 tons of rails to Chicago district mills. Track fastenings orders last week totaled 10,000 tons. New York Central and Pennsylvania track fastenings still pend. Sales of light rails to mining companies have been below expectations, due partly to the use of more conveyor systems in mines. Rail mill operations are 50 to 55 per cent.

Chicago & Eastern Illinois railroad is scrapping 7000 obsolete light capacity freight cars with wooden underframes, but these may not be replaced soon.

Toronto, Ont.—The 34,000 tons of 130-pound rails ordered by Canadian National Railways from Dominion Steel & Coal Corp. Ltd., Montreal, Que., as noted here last week, now are being rolled. They are the heaviest rails ever used by this line.

Car Orders Pending

State Railways of Greece, 200 mechanical refrigerator cars, of 30 metric tons capacity; specifications being issued to J. Drossopoulos, president, Athens, Greece.

Locomotives Placed

Inland Steel Co., Chicago, two 6-wheel switching locomotives, to American Locomotive Co., New York.

Locomotives Pending

Minneapolis, St. Paul & Sault Ste. Marie, 10 to 15 locomotive tenders.

Rail Orders Placed

Canadian Pacific, 30,000 tons, to Algoma Steel Corp., Ste. Marie, Ont.

Rail Orders Pending

Nickel Plate, 20,000 to 22,000 tons of rails with accessories.

Proportions of Various Grades of Ore Maintained

Though shipments of Lake Superior iron ore in 1930 were 28 per cent lower than in 1929, the proportions of the various grades shipped were practically unchanged. The average analysis as compiled by the Lake Superior Iron Ore association shows nonbessemer ore moved last year made up 69.3 per cent of the total. In 1929 it was 69.1 per cent. Bessemer ore in 1930 was 24.7 per cent of the total; in 1929, 24.6 per cent. Manganiferous was 3.3 per cent and 3.9 per cent of the totals for the respective years; silicious was 1.5 per cent of the total in both years, and aluminiferous 1 per cent. Following are the amounts of the five grades shipped by lake in 1930:

	Tons
Bessemer	11,424,963
Nonbessemer	31,961,171
Manganiferous	1,564,574
Silicious	702,000
Aluminiferous	464,465
Total	46,117,173

Monroe-Detroit Rate Up

Detroit—Freight rate on finished steel from Monroe, Mich., to Detroit is increased from 9½ cents per 100 pounds to 10 cents as a result of the Michigan public utilities commission lifting its suspension on a new tariff.

Structural Shapes

Award Total Only 20,348 Tons, Including 9000-Ton Apartment and 2000 Tons of Towers—Inquiry Rate Holds in West—Down in East—Prices Fairly Firm

STRUCTURAL SHAPE PRICES, PAGE 69

New York—Plain structural material is firm at 1.905c, delivered New York, on new attractive business. Some volume of smaller lots has been done at even higher prices. Fabricated material prices also show a tendency to harden, although slowly, as material at old levels is being worked off. General mill backlogs are not large. Total awards are lower despite an increase in small lots. Fresh inquiry is light, mostly confined to public work. Bids on the Sixth avenue subway are not expected before April. One apartment house, 9000 tons, was let.

Boston—Included among several small jobs awarded are 185 tons for a state highway bridge at Revere, Mass., and 118 tons for school building at Arlington, Mass. A telephone building at Watertown, Mass., 400 tons, nears the contract stage.

Philadelphia—Shape specifications continue fair. Eastern shape mills operate 40 to 50 per cent of finishing capacity. Plain standard shapes on new business continue 1.75c, base, eastern mills, with slightly lower being done in some directions.

Pittsburgh—Inquiry on several large structural projects in this district is deferred. Current activity is made up mostly of small lots, which are more numerous and keep fabricators fairly busy estimating. Specifications for plain material are steady but slow. The market usually is 1.65c on new business although practically all tonnage is covered by lower priced contracts.

Buffalo—Structural mills here operate double turn on account of improved demand.

Cleveland—Within a week or so, the local structural shape market is expected to be more active than any week so far this year so many jobs are reaching the closing stage. The point of interest in connection with them is that most of them represent industrial expansion, taking up to 1500 tons or so at a time. Among the few awards of the current week is the plant for Raymond Bag Co., Middletown, O., which went to American Bridge Co., which also took the May Co. addition, 1500 tons. Open market quotations are based on 1.65c, Pittsburgh. Most billings are gainst contracts taken last December at 1.60c.

Chicago—Structural mill operations remain at 35 per cent despite production of special sections for stock by a new South Chicago beam mill. Plain material is quoted 1.70c to 1.75c, Chicago. Bids on the foundation of the 25,000-ton Chicago post office, which will cover 280,000 square feet, may be up within 60 days, but steel for the superstructure probably will not be let for four or five months. Structural inquiries total 11,000 tons, including an 8000-ton viaduct at Milwaukee and about 2000 tons for bridge work in the West. The outer drive bridge 10,000 tons, is active.

Birmingham, Ala. — Fabricating shops continue to book numerous small orders. Virginia Bridge & Iron Co., for instance, will fabricate many bridges over small creeks.

Contracts Placed

9000 tons, 30-story apartment, Central Park west, Sixty-second and Sixty-third streets, New York, to Hay Foundry & Iron Works, New York.

2000 tons, towers for Southern Sierras Power Co., Riverside, Calif., divided equally between Consolidated Steel Corp., Los Angeles, and International Derrick Co., Torrance, Calif.

1500 tons, 2-story addition, May Co., Cleveland, to American Bridge Co., Pittsburgh.

950 tons, 17-story apartment, 2 Beekman place, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.; Lane-Ogle Co., general contractor.

820 tons, tubercular ward, General hospital, Philadelphia, to Morris, Wheeler & Co. Inc., Philadelphia; listed Jan. 15 as going to Bear Engineering Co., Philadelphia.

730 tons, Strawbridge & Clothier store, Jenkintown, Pa., to McClintic-Marshall Co., Pittsburgh.

650 tons, apartment, southwest corner of Seventh avenue and Fifteenth street, New York, to Levering & Garrigues Co., New York; Henry Mandel interests, builders.

635 tons, apartment, 29 West Ninetieth street, New York, to Dreier Iron Works, New York; Geekie, Naughton Co., general contractor.

500 tons, bridge over Red river at Marksburg, La., to Stupp Bros. Bridge & Iron Works, St. Louis.

400 tons, building for Public Service Co. of Northern Illinois, Waukegan, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

400 tons, apartment, Lindon boulevard, Brooklyn, N. Y., to Stanley Iron Works, Brooklyn.

375 tons, plant, Raymond Bag Co., Middletown, O., to American Bridge Co., Pittsburgh; Lockwood-Greene Co., Cleveland and New York, engineers.

375 tons, miscellaneous work, including bridge, New Jersey approach Hudson river bridge, Fort Lee, N. Y., to American Bridge Co., Pittsburgh; George M. Brewster & Son Inc., Bogota, N. J.

325 tons, skating rink, Urbana, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

315 tons, two New Jersey state bridges to the Penn Bridge Co., Beaver Falls, Pa.

300 tons, four temporary dormitories, Seaview hospital, Staten Island, N. Y., to unstated fabricator.

250 tons, building, college of New Rochelle, N. Y., to Just Structural Engineering Co., White Plains, N. Y.

250 tons, postoffice, Roanoke, Va., to Roanoke Iron & Bridge Co., Roanoke; Worsham Bros., Knoxville, Tenn., general contractors.

250 tons, two apartments, Forty-fifth street, Long Island City, N. Y., to Gaynor & Rosenblum, Brooklyn, N. Y.

225 tons, apartment, Foster avenue, Long Island City, N. Y., to Simon Holland Co., New York.

225 tons, building, National Transit Pump & Machine Co., Oil City, Pa., to Keystone Engineering Co., Pittsburgh.

185 tons, Monroe street bridge, Baltimore, to Shoemaker Bridge Co., Pottstown, Pa.

185 tons, state highway bridge, Revere, Mass., to Boston Bridge Works Inc., Boston.

160 tons, apartment, Bedford avenue, Brooklyn, N. Y., to Gaynor & Rosenblum, Brooklyn.

150 tons, bascule bridge, Stone Harbor, N. J., to Penn Bridge Co., Beaver Falls, Pa.

150 tons, bridge, New York Central railroad, to Bethlehem Steel Co., Bethlehem, Pa.

135 tons, foundry and machine shop for Frank Hamachek Machine Co., Kewaunee, Wis., 65 tons, and foundry and pattern storage building for the Calorizing Co., Wilkinsburg, Pa., to the Austin Co., Cleveland.

135 tons, Mary C. Williams school, Wilmington, Del., to American Steel Engineering Co., Philadelphia.

118 tons, high school, Arlington, Mass., to New England Structural Co., Boston.

110 tons postoffice and federal building, Bloomington, Ill., to Midland Structural Steel Co., Chicago.

105 tons, state highway bridge over Nooksack river, Washington, to Isaacson Iron Works, Seattle.

100 tons, miscellaneous work including incinerator plant for Lakewood, O., to Pittsburgh-Des Moines Steel Co., Pittsburgh; construction contract sublet to Super-Built Construction Co., Cleveland.

100 tons, General hospital, Wilmington, Del., to American Steel Engineering

Awards Compared

	Tons
Awards this week	20,348
Awards last week	31,592
Awards two weeks ago	27,383
Awards this week in 1930	44,063
Av. weekly awards, 1930	35,242
Av. weekly awards, 1931	27,018
Av. weekly awards, Dec.	29,804
Tot. awards to date, 1930	133,330
Tot. awards to date, 1931	135,089

Co., Philadelphia.
100 tons, state bridge, Bare Hills, Md., to Phoenix Bridge Co., Phoenixville, Pa.
100 tons, bridge, New York Central railroad, to Phoenix Bridge Co., Phoenixville, Pa.
100 tons, bridge, Richmond, Va., to Richmond Structural Steel Co.
100 tons, state school, California, Pa., to Keystone Engineering Co., Pittsburgh.
100 tons, apartment, Bunting street, Brooklyn, N. Y., to Pecker Iron Works, Brooklyn.
100 tons, apartment, 2 Twenty-second street, Bronx, N. Y., to Sladon Iron Works, Bronx.
100 tons, addition, Detroit Gray Iron Foundry Co., Detroit, to Whitehead & Kales Co., Detroit; general contract to C. O. Barton Co., Detroit; Mildner & Eisen, Detroit, architects.
100 tons, high school building, University of Detroit, to Palmer Bee Co., Detroit; Malcomson, Higginbothan & Trout, architects; Otto Misch Co., Detroit, general contractor.

Contracts Pending

8000 tons, Thirty-fifth street viaduct, Milwaukee; bids about March 1.
2500 tons, building, Standard Oil Co. of New Jersey, Washington; bids Feb. 11.
1500, Lincoln hospital, Bronx, New York.
1500 tons, garage and warehouse, Speare & Co., Twenty-third street, New York.
1200 tons, postoffice and federal building, Little Rock, Ark.
1200 tons, bridge over Red river at Coushatta, La.
1000 tons, produce terminal, Pennsylvania railroad, Baltimore.
900 tons, mill building for American Sheet & Tin Plate Co., Gary, Ind.
800 tons, capital Square building, Columbus, O.; new bids called Jan. 27, initial bids having been rejected because $100,000 over architect's appraisal.
800 tons, bank, Reading, Pa.
700 tons, Verdi junior high school, Chicago, bids rejected; new bids Feb. 3.
565 tons, seawall, Lake Pontchartrain airport, Orleans levee board, New Orleans.
550 tons, South high school, Cleveland; general contract to Aronberg-Fried Co., Cleveland.
500 tons, structural work for Chicago avenue station, Chicago Rapid Transit Co., Chicago.
435 tons, changing Buffalo bayou, Southern Pacific station project, Houston, Tex.; Don Hall, general contractor.
400 tons, postoffice, Erie, Pa.; funds appropriated but only preliminary sketches made.
275 tons, building, Ursinus college, Collegeville, Pa.
270 tons, two institute buildings for San Francisco; McClintic-Marshall Co., San Francisco, low.
200 tons, theater, Newburgh, N. Y.
154 tons, subway under Southern Pacific tracks, Santa Ana, Calif.; bids Feb. 9.
150 tons, fire station, East Tremont avenue, Bronx, N. Y.
145 tons, Seventh street crossing, Oakland, Calif.; bids opened.
100 tons, school, Noe street, San Francisco; bids opened.
100 tons, Bienville street wharf, New Orleans.
Unstated tonnage, central steam plant for residences, North Tonawonda, N. Y.; Arthur J. Slade, North Tonawanda has filed application with New York state public service commission.

Concrete Bars

Total Awards 12,990 Tons Led by 3000-Ton Lot in Chicago, 2800-Ton Job in St. Louis—1500-Ton Subway in New York Also Let—Inquiry Rate Well Maintained

REINFORCING BAR PRICES, PAGE 69

New York—Practically all distributors of concrete reinforcing bars hold to 1.70c, Pittsburgh. Three jobs totaling 2000 tons, however, were placed recently at much lower prices. This created an uncertain and unsettled situation. Buyers for several projects have since shopped unsuccessfully for lower prices. Lettings and inquiries are active. Inquiry is almost entirely for public work. About 1000 tons for subways remains to be placed, 1500 tons for one section having been let late last week. About 800 tons is up for an elevated highway section.

Boston—Outside of small lots, aggregating about 100 tons, little was done in concrete bars last week. The telephone building at Watertown, Mass., 750 tons, may reach closing stage this week.

Pittsburgh—Activity in reinforcing bars is centered mostly on small projects. Several large jobs are in prospect but formal inquiries are lacking. Incoming tonnage to mills holds at about the December rate. Prices are unchanged.

Cleveland—Concrete bar awards are scarce but the inquiry rate remains good. Lowensohn Construction Co. is scheduled to buy 1200 to 1500 tons for Central-Lorain viaduct at an early date. Several other jobs are pending in the 100 to 200-ton range, including May Co. addition and buildings for General Electric Co., and Otis Steel Co. A school job on which Aronberg-Fried Co. is low, will take about 160 tons.

Chicago—Billet reinforcing bar fabricators are strengthening prices and have named a minimum of 2.00c. Much road work is pending but building inquiries are the lightest in years. Several products are being refigured, including Chicago schools and city hall, Hammond, Ind., 200 tons. A 5000-ton order for division Z of the Chicago sanitary district sewage disposal works is expected soon. Ogden avenue job, 3000 tons, was let.

St. Louis—One of the largest concrete bar orders in months has been divided between Laclede and Scullin Steel Cos. It calls for 2800 tons for the St. Louis merchandise mart.

Birmingham, Ala.—Dealer purchases of concrete bars with many small contracts have created an accumulation making it possible for full schedules by Connors Steel Co. Louisiana, Alabama, and other nearby states are starting road building.

Awards Compared

	Tons
Awards this week	**12,990**
Awards last week	**4,981**
Awards two weeks ago	**4,464**
Awards this week in 1930	**3,050**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**7,331**
Av. weekly awards, Dec	**3,937**
Total awards to date, 1930	**16,962**
Total awards to date, 1931	**36,653**

Contracts Placed

3000 tons, Ogden avenue improvement, Chicago, to Great Lakes Dredge & Dock Co., Chicago.
2800 tons, St. Louis merchandise mart, St. Louis, divided between Laclede Steel Co., and Scullin Steel Co., St. Louis.
1500 tons, subway, route 107, section 9, Brooklyn, N. Y., to Igoe Bros., Newark, N. J.; Marcus Construction Co., general contractor.
700 tons, international house, University of Chicago, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.
650 tons, Wards Island anchorage, Triboro bridge, New York, to Capitol Steel Co., New York; Bersin-Romm Engineering Co., New York, general contractor.
500 tons, miscellaneous work on New Jersey approach to Hudson river bridge, Fort Lee, N. J., to Truscon Steel Co., Youngstown, O.; George M. Brewster & Son Inc., Bogota, N. J.; general contractor.
480 tons, school, Noe street, San Francisco, to Truscon Steel Co., San Francisco.
400 tons, Edmond Meany hotel, Seattle, to Northwest Steel Rolling Mills, Seattle.
335 tons, foundations, west side elevated highway development below Thirtieth street, New York, to National Bridge Works, Long Island City, N. Y.; Frederick Snare Corp., general contractor; tie rods still pending.
330 tons, army medical school Walter Reed hospital, Washington, to Hudson-Dougherty Co., Washington.
300 tons, several state highway bridges in Oregon, to unstated interests.
250 tons, bridge, Chicago, Milwaukee, St.

(*Concluded on Page 77*)

Strip

Slightly Better Orders and Shipments, with Prices Holding Firmly—Small Lots Are Rule

STRIP PRICES, PAGE 69

Pittsburgh—Strip steel specifications are holding their own, with slight improvement over December. Demand from the automotive industry is spotty, orders from practically all interests involving only small lots for early needs. Little pressure is encountered against prices, the market continuing 1.55c to 1.60c for wide hot strip and $2 a ton higher for narrower material. Cold-rolled strip remains 2.25c to 2.35c. Backlogs are absent and mill operations are guided by the daily flow of business. The average continues 35 per cent for hot mills and 20 to 25 per cent for cold strip.

New York—A better tone prevails in cold-rolled strip steel. While most current business continues to move at 2.25c, Pittsburgh, more orders are going at 2.35c. Hot strip is firm at 1.55c, Pittsburgh, for wide and 1.65c for narrow. While still restricted to small lots, demand is slightly better.

Philadelphia—Demand for steel strip shows no improvement and prices are unchanged at previous levels.

Youngstown, O.—Merely routine orders in strip are coming to local mills, showing no apparent indications of improvement. In this strip is parallel with autobody sheets, as automotive interests are buying cautiously. This is shown in another way by the fact that most business in strip is for hot-rolled material while smaller mills are getting orders for cold-rolled material. While shading is suspected as one inducement to cold-rolled strip orders, this suspicion is discarded in other directions by greater ability of smaller low-cost mills to make quick deliveries. Small inventories make quick deliveries a primary consideration. Quotations generally have not changed, hot-rolled bringing 1.65c to 1.70c, Pittsburgh, and cold-rolled 2.25c to 2.35c, Pittsburgh or Cleveland.

Cleveland — A few automotive parts makers specify hot strip steel in a fairly active way and occasional new orders for small lots are noted. Cold strip is quiet, no new inquiries being received in the past ten days. Prices hold, however, 2.25c, Cleveland, being the usual figure on cold strip with 2.35c occasionally obtainable on small quantities. Hot is quoted 1.55c and 1.65c, Pittsburgh, on wide and narrow, respectively.

Chicago — Cold-rolled strip mills are receiving sporadic shipping releases but orders are not greatly improved. Additional contracts have just been signed on the basis of 2.25c to 2.35c, Pittsburgh-Cleveland. Cold-rolled operations are 35-40 per cent.

Operations Gain, But Rise This Week Is Slowed

Youngstown, O.—Steelwork operating average for this district is 50 per cent of capacity, an increase of two points over last week and the fifth gain in as many weeks. Chief increase was made by Republic Steel in relighting its Trumbull Cliffs furnace with capacity of 1200 tons daily, in almost doubling its tin mill output, and improvement in finishing operations, making the company plants here now at 40 per cent.

Sharon Steel Hoop relights its Lowellville stack Feb. 1 as result of expanding strip and sheet operations. Sheet & Tube and Carnegie are unchanged this week at 50 per cent capacity and Newton continues 70. Empire operations declined slightly to 45 per cent for plants in the district. Outlook for improvement in the pipe market is distinctly favorable.

Ingot output for both Corporation and independants is 50 per cent. Tin mill production is above last week's while pipe is unchanged. Sheet output, at 48 per cent, gains slightly.

Pittsburgh—Steel plant operations generally are unchanged. Ingot production holds about 45 per cent with sheet and tin plate schedules unchanged at 40 and 60 respectively. Strip and pipe mills continue 35.

Philadelphia—Eastern steelworks, as an average, have lost a point this week and now are producing at 46 per cent capacity. One of the larger mills continues unchanged at 47 to 48 per cent.

Buffalo—An unexpected spurt in open-hearth operations this week increased rate to 54 per cent capacity. Some of the largest mills in the district have been placed on double turn for three or more days a week.

Chicago — Changes in operating rates in the district have been negligible in the last week. Ingot output continues 45 per cent. Active steelworks blast furnaces are 13 of 36.

Cleveland—Ingot production, up two points this week with an open-hearth furnace lighted, has averaged this 50 per cent capacity level for three weeks of the month, the other two weeks being at 48 per cent. Seventeen of the district's 34 open hearths are now on.

Birmingham, Ala.—Ingot output continues 60 per cent of capacity, indications pointing to further improvement shortly. Furnaces at both Ensley and Fairfield are ready for production and Gulf States prepares another open hearth with three of six pouring.

Warehouses Continue With Slight Gains in Sales

Warehouse Prices, Page 91

New York—Jobbing market in sheets has become more stabilized, with No. 24 galvanized now 4.00c to 4.10c; No. 24 black, 3.50c to 3.65c; and No. 10 blue annealed at 3.00c to 3.40c. Other products are unchanged. Demand shows slight gain.

Philadelphia—Jobbers are disappointed with present sales volume because of a falling off in the past week. January bookings will be less than December's unless suddent improvement develops. Prices are firm and unchanged.

Baltimore—Jobbing demand continues quiet with an easier tone in sheets. While No. 10 blue annealed are unchanged at 3.50c, some sellers have marked down No. 24 black to 3.50c, and No. 24 galvanized to 4.00c. Shapes, plates and bars are unchanged.

Buffalo—Gradual improvement continues in warehouse sales. January sales promise to exceed those of either November or December, by a good margin.

Cleveland—Jobbers continue to receive orders in steadily increasing volume. Demand for practically all lines shows substantial improvement over the rate of the past few months. Prices are firm and unchanged.

Detroit—Specifications for iron and steel products out of stock are somewhat better with increases noted in sale of cold-finished and alloy products. Prices continue unchanged.

Cincinnati—Warehouse business continues light, holding at a rate comparable with the last quarter. Prices are unchanged.

St. Louis—No change has taken place in demand for iron and steel goods from store. Building materials show more than usual quietness. There is better demand for wire fencing and other wire goods from the south.

Concrete Bars

(*Concluded from Page 73*)

Paul & Pacific railroad, Milwaukee, to American System of Reinforcing, Chicago.

250 tons, bars, joists and mesh, Whittier school, Hampton institute, Hampton, Va., to Truscon Steel Co., Youngstown, O.

250 tons, Potter County court house, Amarillo, Tex., to Colorado Builders' Supply Co., Pueblo, Colo.; C. S. Lambie & Co., Amarillo, general contractors.

200 tons, warehouse, Sansome and Vallejo streets, San Francisco, to W. S. Wetenhall Co., San Francisco.

200 tons, sewer, Avenue P, Brooklyn, N. Y., to Tidewater Structural Materials Corp., New York.

175 tons, sewer, Pine section, Westchester, N. Y., route, to Tidewater Structural Materials Corp., New York.

170 tons, sewer, New Rochelle, N. Y., to Tidewater Structural Materials Corp., New York.

100 tons, metal reinforcement, Attica prison, Attica, N. Y., to Joseph T. Ryerson & Son Inc., Chicago; William J. Gallagher, general contractor.

100 tons, synagogue, St. Louis, to Laclede Steel Co., St. Louis; McCormick-Combs, general contractor.

100 tons, skating rink, Urbana, Ill., to Trimmer & Nydele Co., Chicago.

100 tons or more, approaches to Hawthorne bridge, Portland, Oreg., to unstated interest; Eldefsen & Weygrandt Co., Portland, general contractor.

100 tons, telephone building, Ripon, Calif., to W. S. Wetenhall Co., San Francisco.

Contracts Pending

2311 tons, seawall, Lake Pontchartrain airport, Orleans levee board, New Orleans.

1500 tons, Central-Lorain bridge, Cleveland; Lowensohn Construction Co., Cleveland, contractor, expected to close soon.

800 tons, third section, west side elevated highway foundations; New York; James Stewart & Co., general contractor.

600 tons, changing Buffalo bayou, Southern Pacific station project, Houston, Tex.; Don Hall, general contractor.

450 tons, two institute buildings for San Francisco; bids opened.

305 tons, Plaza section, Port Richmond, N. Y., approach, Kill Van Kull bridge; bids Feb. 16.

300 tons, section 2, joint trunk sewer, New Jersey; bids Feb. 5.

250 tons, grading and drainage, including grade separation, north state parkway, section 1, Long Island, N. Y., park commission; bids Feb. 5.

217 tons, public school, Louisville, Ky.; general contract to Rommel Construction Co., Louisville.

200 tons, city hall, Hammond, Ind.; project being refigured.

200 tons, 2-story addition, May Co., Cleveland.

160 tons, South high school, Cleveland; Aronberg-Fried Co., Cleveland, low on general contract.

102 tons, subway under Southern Pacific tracks, Santa Ana, Calif.; bids Feb. 9.

100 tons, building for Otis Steel Co., Cleveland.

100 tons, building for General Electric Co., Cleveland.

100 tons, third section, west side elevated highway foundations, New York; H. H. Sherwin, general contractor.

100 tons, Norton infirmary, Louisville, Ky.; general contract to E. J. Whalen Construction Co., Louisville.

Unstated tonnage, Mount Vernon memorial highway, part in District of Columbia to Alexandria, Va.; to be let in two sections; bids Feb. 25.

Obituaries

(*Concluded from Page 23*)

engineer and builder, died Jan. 23 at East Orange, N. J. Among projects he superintended were Tunkhannock viaduct of Lackawanna railroad, Lenox and Willis avenue bridges, New York, piers for St. Lawrence river bridge, and piers for Hawksberry bridge near Sydney, Australia.

□ □ □

Charles A. Gutenkunst, 72, president and treasurer of Milwaukee Malleable & Gray Iron Co., and of its affiliate, Milwaukee Hay Tool Co., Milwaukee, died Jan. 17. He was a native of Milwaukee and with his brother, the late William Gutenkunst, founded the industries in 1875.

□ □ □

Evan Llewelyn, 85, retired steel man of Newport, Ky., died recently.

□ □ □

Ray L. Lambert, 44, vice president, Lambert Art Metal Co. Inc., Columbus, O., died recently.

□ □ □

Charles A. Anderson, 63, vice president of the Corry-Jamestown Mfg. Corp., Corry, Pa., metal furniture, etc., died Jan. 6. Prior to becoming vice president of the Corry-Jamestown company upon its organization in 1919, he was general plant superintendent of Watson Mfg. Co., Jamestown, N. Y., and for many years had been identified with Art Metal Construction Co.

Pipe

Municipal Inquiry Active—Detroit Wants 3500 Tons—Awards Small—Steel Lines Up

PIPE PRICES, PAGE 91

New York—Cast pipe buying is seasonally active. Utility buyers, yet uncovered on first half requirements, seek lower quotations. Prices are easier, $35, eastern foundry, being shaded. Subways are taking a good tonnage. Freeport, N. Y., wants 600 tons and several other jobs remain to be placed. Foundry backlogs are heavier and operations are up. A Baltimore utility closed on more than 1000 tons. That city also is considering water works extensions to cost $35,000,000, which will take large quantities over the coming few years.

An independent oil and gas company is in the market for 30,000 tons of gas line pipe for installation in the West. Standard Oil Co. of New York will inquire shortly for approximately 5100 tons of gasoline pipe for installation in New England.

Boston—Cast pipe contracts are fairly large. Waltham, Mass., awarded 100 tons, and Woonsocket, R. I., let a year's requirements. Portland, Me., closed on 1629 tons. Pending inquiries include 200 tons for Framingham, Mass., and 649 tons for Mansfield, Mass. Prices are firm.

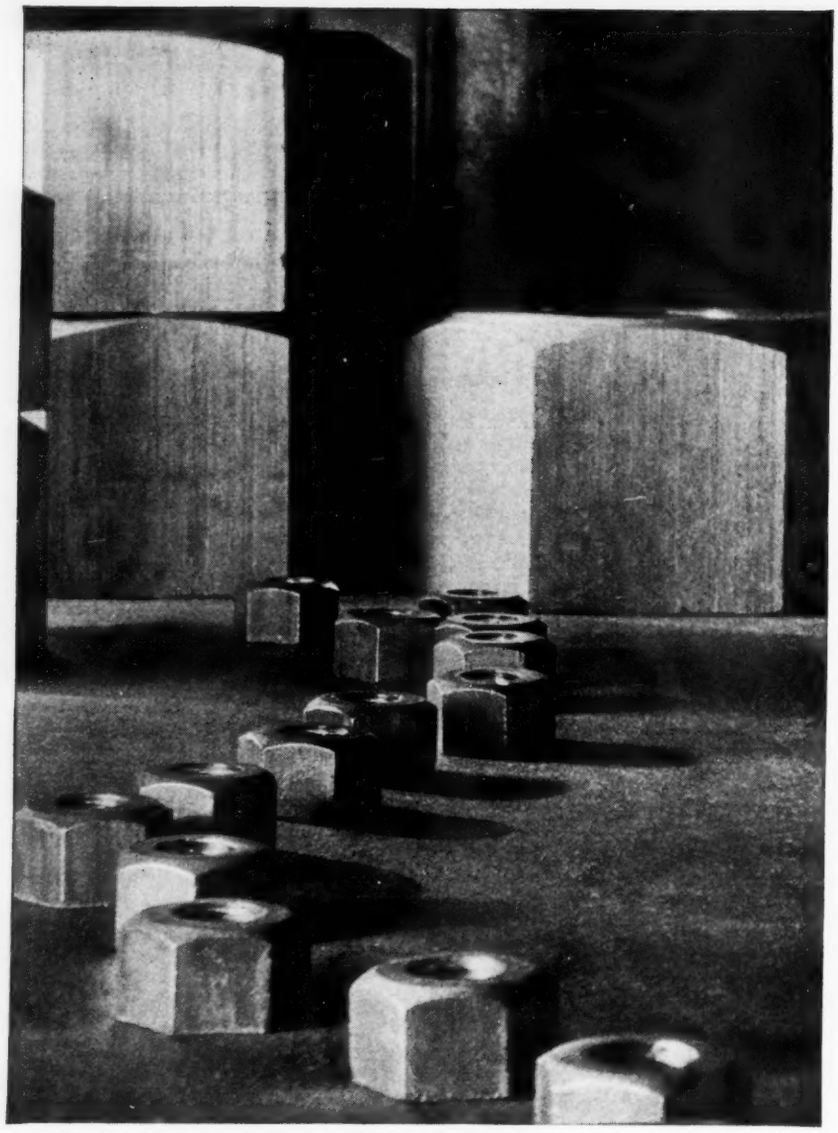
Pittsburgh—Standard pipe demand holds its own at a low rate. Better activity is looked for with the resumption in building operations. Considerable work is in prospect in line pipe. With the exception of a few lines, closing on most projects will be deferred. Oil country goods move slowly. Mechanical tubing is in slightly better demand than a month ago. Locomotive and boiler tubes continue slow. Pipe mill operations are still around 35 per cent in the Pittsburgh district. Youngstown area does better.

Cleveland—Youngstown mills expect to share in 200 miles of 24-inch, involving about 50,000 tons for a line from Kettleman hills to Los Angeles to be constructed in April by Southern Fuel Co.

Standard full weight merchant pipe still is in limited demand, the turnover by jobbers not having "hit" its spring stride as yet. Some 3-inch square tubing was bought here.

Chicago—Prospects are fair for municipal cast pipe orders. Detroit closes bids Feb. 2 for 3500 tons and St. Louis too will close bids on 800 tons. Mansfield, O., awarded 300 tons. Chicago delivered prices for private work remain unchanged in a range of $45.20 to $46.20 a ton, but more pipe now is being sold on a linear foot basis. Private orders are disappointing. Expected heavier orders from utility companies have failed to materialize. Utility buying thus far about equals that of last year.

Birmingham, Ala.—Several speci-



BOURKE-WHITE PHOTO

Use the EMPIRE Bolt Planning Service

MACHINE designers, purchasing agents and shop men are invited to use the R B & W staff's engineering facilities for guidance in specifying the various types and sizes of bolts and nuts they use. In the many years we have been making EMPIRE nuts and bolts for America's premier industries, we have assembled a wealth of technical data on the relative strength and strain resistance of the various bolts now in popular use.

Important savings of time and money have been effected by many large corporations following analysis of their requirements by our engineers. In many cases, we have shown where special bolts could be replaced with standard bolts, and the number of sizes used considerably reduced. This technical service is available without charge or obligation. We should be glad to review your present bolt and nut specifications and to make suggestions based on scientific knowledge and a wide range of practical experience. Your request, addressed to our nearest office, will bring you the full particulars.

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Sales Offices at Philadelphia, Detroit, Chicago, San Francisco, Los Angeles, Seattle, Portland, Ore.

BOLTS EMPIRE NUTS-RIVETS

fications are received from larger cities. Bids too are out on considerable tonnage. Production is steady. Manufacturers keep warehouses in various sections of the country well stocked. Price base is firm.

Contracts Placed

1629 tons, 6 to 20-inch cast pipe for Portland, Me., to R. D. Wood & Co., Florence, N. J.

600 tons, 6-inch cast pipe for Consolidated Gas Co., New York, to United States Pipe & Foundry Co., East Burlington, N. J.

300 tons, 6 and 8-inch cast pipe for Mansfield, O., to McWane Cast Iron Pipe Co., Birmingham, Ala.

100 tons or more, various sizes, cast pipe for Houston, Tex., to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons or more, 8 to 12-inch cast pipe for Clarkton, Mo., to McWane Cast Iron Pipe Co., Birmingham, Ala.

100 tons, 8 and 10-inch cast pipe for Westchester county, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.

100 tons, 8-inch cast pipe for Waltham, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

Unstated tonnage, annual requirements of cast pipe for Woonsocket, R. I., to United States Pipe & Foundry Co., East Burlington, N. J.

Contracts Pending

3500 tons, 6 and 8-inch cast pipe for Detroit; bids Feb. 2.

649 tons, various sizes of cast pipe for Mansfield, Mass.

800 tons, 6 and 8-inch cast pipe for St. Louis; bids Feb. 2.

600 tons, 18 to 24-inch cast pipe for Freeport, N. Y.

600 tons, 6-inch cast pipe, Consolidated Gas Co., New York.

425 tons, 6 to 12-inch cast pipe for Laurel, Miss.; bids Jan. 26.

235 tons, 12-inch cast pipe, for Donaldsonville, La.

200 tons, 6 and 8-inch cast pipe for Framingham, Mass.

185 tons, mostly 4 and 6-inch cast pipe for Buffalo, and 10 tons of fittings; bids Jan. 30.

Steel Pipe Orders

100 tons, 3-inch square tubing for a Cleveland district consumer, reported placed with Pittsburgh interest.

Steel Pipe Pending

50,000 tons, 24-inch line from Kettleman Hills, Calif., to Los Angeles, 200 miles, for Southern Fuel Co.; to be started in April; Mahoning valley mills expect to participate in order.

30,000 tons, 8, 10, 12 and 14-inch gas line for an independent oil and gas company for installation in Far West.

5100 tons, 6⅝-inch gasoline pipe for Standard Oil Co. of New York, about 100 miles between East Providence, R. I., and Springfield and Worcester, Mass.; specifications to be issued shortly through Boston office.

2000 tons, large size steel water pipe for Baltimore; early purchase contemplated.

Wire

Western Weather Hurts Farm Prospects and Slows Jobber Buying—Prices Holding Well

WIRE PRICES, PAGE 69

Chicago—Unusually mild weather throughout western markets, prolonging last summer's drought is depressing common wire products. Jobber orders again made a fair gain, but dealers' business is lacking. It is pointed out wheat and other winter crops will be seriously damaged unless there are heavy snows within the next 60 days. Existing jobber and manufacturers' wire sales do not test prices. Quoted nail prices are $1.95 and $2.05, Chicago or western mills. Electrical wire products are moving better. Western mills give no indication now of heavier operating schedules.

Worcester, Mass.—Wire is showing some strength in diversification but production remains about the same. Small orders predominate. Prices are firm. Plain bright wire to dealers is quoted at 2.40c, base, Worcester.

New York—Improvement in wire buying, noted in some mid-western districts, is expected to be reflected here shortly. Meanwhile, plain bright wire continues at 2.20c, Pittsburgh, some small lots going at 2.30c. Nails are $1.90, Pittsburgh, to jobbers and $2 to the general trade. Little gain is expected much before March when building operations are expected to be more of a factor.

Pittsburgh—Wire demand is steady but has improved little over the December volume. A number of jobbing products are in their usual slow period and general industrial demand for manufacturers' wire has expanded only slightly since the first of the year. Automotive business continues light. Prices are encountering less pressure and and are fairly steady at $1.90 to $2 for wire nails, 2.20c to 2.30c for plain wire, and $35 for wire rods.

Buffalo—Wire manufacturers find that jobbers' stock of netting and cloth are exceptionally low this year, indicating large buying soon. Some good sized shipments are already on their way to southern and Pacific coast points with indications that northern demand also will be much better than last year. Other wire business is much improved over late 1930 averages.

Cleveland—Current wire orders are increasing and prices are reported firm. Better inquiry has come to sellers in this district from local manufacturers. Bolt and nut makers are working on improved schedules, Lamson & Sessions now on a 5-day week. Plain manufacturers' wire is 2.20c to 2.30c, nails are $1.90, spring wire, 3.20c. Jobbers are preparing for the February upturn in sales to country sections. Producers report continued action by some consumers in shopping for lower prices and attempts to circulate price reduction rumors.

Nut, Bolt, Rivet Demand Exceeds December Rate

Bolts, Nuts, Rivets Prices, Page 69

Pittsburgh — Demand for bolts, nuts, and rivets shows little further increase but continues moderately ahead of the December rate. Orders remain in small, individual lots from a diversified list of users. Operations are unchanged at around 35 per cent, while prices are steady at 73 off for bolts and nuts and 2.75c for large rivets.

New York—While subject to shading, 73 off list continues to be quoted on bolts and nuts by most sellers. Rivets are firm at 2.75c, Pittsburgh. Demand is featureless, with eastern mills still averaging around 35 per cent.

Chicago—Specifications for bolts and nuts show a marked gain over November, but are equal to December. A few implement makers are taking more material. Large structural rivets are quiet. Discounts for bolts and nuts are 73 off, but some of the jobbers in the northwest have been making concessions. Producer operations are about 40 per cent.

Survey Cast Pipe Sales

Manufacturers of cast iron pipe and fittings sell 58.4 per cent of their production to industrial consumers, 35.9 per cent to dealers and 5.7 per cent to manufacturers' sales branches, according to a recent survey made of the industry's sales by the department of commerce.

Seventy-four industries classified under the industry designation make gas, water, soil and plumbers' pipe and fittings. Manufacture of wrought iron and steel pipe is not included in this classification.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	17.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.01 to 17.51
Alabama, del. St. Louis	14.92 to 15.42
Alabama, del. Cincinnati	14.69 to 16.19
Alabama, del. Cleveland	16.51 to 17.51
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.00 to 16.50
Ala., Boston dock del.	16.25 to 16.75
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cinn.	14.69 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	18.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.26

MALLEABLE

Valley furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Chicago, furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.25 to 17.75
Buffalo fur., local del.	17.00
Montreal, delivered	20.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

Coke

Prices Per Net Tons
Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.25 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	9.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$11.25 to 12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52-53%	24 to 26 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	23 cents

Refractories

FIRE CLAY BRICK
Per 1000 f.o.b. Works
First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK
Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$30.00
Pittsburgh, bessemer	30.00
Youngstown	30.00
Cleveland	30.00
Philadelphia	35.30 to 36.30
Chicago	31.00
Forging, Chicago	36.00
Forging, Pittsburgh	36.00
Forging, Philadelphia	40.30 to 41.30

SHEET BARS

Pittsburgh	30.00
Youngstown	30.00
Cleveland	30.00
Chicago	31.00

SLABS

Pittsburgh	30.00
Youngstown	30.00
Cleveland	30.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$15.00
Washed gravel, import duty paid east, tide, gross ton	19.00 to 19.50

TRADE C I C MARK

Cleveland-Cliffs

Iron Ore
Pig Iron
Coal
Coke

THE CLEVELAND-CLIFFS IRON CO.
Cleveland, Ohio

Pig Iron

Shipments Show Further Gain Over December—Orders Light —Three Stacks Are Lighted

PIG IRON PRICES, PAGE 80

Pittsburgh—Shipments of pig iron and new orders hold at their recent quiet rates. Business is little changed from a month ago but consumption has improved moderately. The melt by radiator and sanitary ware foundries is steady, while some smaller interests have increased their requirements since the first of the year. Steel companies show only a mild gain in pig iron requirements. No early resumption by idle stacks is in prospect, producers stocks being reduced and now considerably smaller than a year ago. Prices are unchanged.

New York—Dullness dominates pig iron business, the week's sales aggregating less than 4000 tons. New inquiry totals 3000 tons. A firmer tone prevails in southern iron, $10.50, Birmingham, equivalent to $16, delivered New York docks, now appearing to be minimum. Buffalo iron is $15 to $16, furnace, in northern New Jersey and $15.50 to $16, in other sections of the New York metropolitan district.

Boston—The larger New England foundries are melting iron only two or three days a week and pig iron demand continues restricted. About 1500 tons was booked by sellers in the past week. Several fair size inquiries still are pending.

Philadelphia—Additional large orders for basic iron have been placed. Foundry sales are small, and for early shipment. Prices are unchanged.

Buffalo—A slight improvement is noted in the pig iron market here, though operations continue unchanged, with only four stacks active. Makers claim $16 is minimum for eastern delivery, and $17.50, base, furnace, for local shipment.

Youngstown, O.—Lighting of the Trumbull Cliffs blast furnace of the Republic Steel Corp., at Warren, O., Jan. 24 makes eight stacks active of the district's total of 34. The stack's capacity has been increased from 700 tons to 1200 tons daily. Relighting of the Lowellville stack of the Sharon Steel Hoop Co. is scheduled for about Feb. 1. The bulk of merchant iron moving in the valley district continues to be shipped as hot metal to ingot mold shops. No. 2 foundry brings $17, valley, and malleable and bessemer $17.50.

Cleveland—Shipments of pig iron by two important merchant furnace interests this month are 30 to 35 per cent ahead of those in December. The others report gains, but of less importance. Some consumers have not taken all the iron due them on fourth quarter contracts, and new business is slow. Sales booked by furnace interests with headquarters in Cleveland during the past week totaled 10,000 tons, slightly less than in the week preceding. Inquiries show some improvement. The market in Cleveland is nominal at $17.50, base, furnace, for local delivery. The minimum for outside shipment appears to be $16. The lake furnace price for delivery in western and southern Ohio and northern Indiana continues $16 to $17, and for lower Michigan outside of Detroit, $17.50.

Chicago—Despite a tapering of large pig iron sales, small orders representing seasonal requirements are holding to the rate of the last three weeks. The larger orders are fewer in number and in the aggregate are much below the November buying. Shipments are the outstanding feature this month. The price is steady at $17.50, base, Chicago furnace. Although some southern furnaces have not withdrawn $10.50 the market is tightening to $11, furnace.

St. Louis—January will show a gain of more than 33 per cent over December shipments. New buying is disappointing, the melt is irregular and the outlook is not too promising.

Birmingham, Ala.—Two Alabama furnaces have been blown in to make basic and two more probably will be lighted in Februaryto make foundry iron. Consumption in Alabama is increasing and shipments to outside districts continue steady.

Toronto, Ont.—Sales of merchant pig iron during the week were the largest this year, with car builders and others showing signs of more activity. Contracting, however, is virtually at a standstill, consumers taking only enough for immediate requirements.

Ferroalloy Demand Slightly Heavier Than in December

Ferroalloy Prices, Page 80

New York—Ferromanganese is unchanged at $85, duty paid, in carloads. There is little current demand, and contract specifications reflect only moderate improvement in steelmaking operations. Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $30, furnace, in lots up to 100 tons and foreign spiegeleisen, 26 to 28 per cent, $34, duty paid, Baltimore.

Numerous small lots of special ferroalloys are moving to consumers. All of the alloys are more active than in the latter part of last year, but large orders are few. Prices are steady except for weakness in tungsten. Ferrotungsten is unchanged but future wolframite is easy while spot is at a premium. The range is about $3.25 to $3.50 in bond for futures, plus duty $7.93, to $12.50 duty paid for spot.

Pittsburgh—Activity in ferroalloys is unchanged while shipments of ferromanganese and spiegeleisen continue slightly heavier than in December. The market on small lots of ferromanganese continues $89.79, delivered, with spiegeleisen $30, furnace. Ferrotungsten is steady at $1.10 to $1.15.

Semifinished Shipments Moderately Slower

Semifinished Prices, Page 80

Pittsburgh—New business in semifinished steel is made up almost entirely of small lots, with the aggregate lacking improvement. The market is steady at $30 for rerolling billets, slabs and sheet bars. The $36 quotation on forging billets is not provided a test by current business, but in the absence of large inquiries is fairly well maintained at this figure. The price of wire rods continues $35.

Youngstown, O.—Two independent open-hearth furnaces were lighted this week. Little change is noted in shipments of sheet bars, billets and slabs. The usual price of these three commodities is $30,

Cleveland — Specifications for sheet bars, billets and slabs for the week are not quite as large as in the week preceding, though the leading merchant producer here continues to operate eight of its 14 open hearths. The market is steady at $30, base, Cleveland and Youngstown, O., for sheet bars, billets and slabs.

Chicago—Semifinished shipments are reduced from early in the month. Billets and blooms, 4 x 4-inch base, now are quoted $31, Chicago, and forging billets are $36.

Scrap

Slight Strengthening of Price on Some Grades Follows Buying—Other Grades Show Loss

Chicago—Due to a small sale of heavy melting steel at $10.25 the range now is $10 to $10.25, which amounts to a 25 cent drop without the usual 50 cent spread between dealer and consumer quotations. Dealers still are unable to buy against existing orders for less than $10, Chicago switching district. As a result of heavy reserves in large melters' yards, shipments this month are 10 to 15 per cent under a year ago, but 10 per cent above the average rate for the final quarter of 1930. No gneral weakening in prices has developed despite the drop in melting steel. Several large buyers have felt some concern about the continued weakness as country collections have been impaired appreciably. Melting steel now is with-

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	9.50 to 11.00
Boston, dealers	7.00 to 7.30
Buffalo, No. 1	10.75 to 11.25
Buffalo, No. 2	9.25 to 9.75
Chicago	10.00 to 10.25
Cinci., deal.	9.50 to 10.00
Cleve., No. 1	10.00 to 10.50
Cleve., No. 2	9.75 to 10.00
Det., No. 1 deal.	9.50 to 10.00
Det., No. 2 deal.	7.00 to 7.50
E. Pa. del. mill	10.00 to 11.00
N. Y. del. R. R.	7.00
N. Y. deal. No. 2	5.50
N. Y., deal. yd.	5.00
Pitts., No. 1.	12.50 to 13.50
St. L. No. 1 sel.	10.50 to 11.00
Federal, Ill.	9.75 to 10.25
Granite C., Ill.	9.00 to 9.50
Valleys, No. 1	12.50 to 13.00

COMPRESSED SHEETS

Buffalo, dealers	9.25 to 9.75
Chicago	8.50 to 9.00
Cleveland	9.00 to 9.25
Detroit, dealers	9.25 to 9.75
E. Pa. new mat.	9.00 to 10.00
Pittsburgh	12.50 to 13.00
Valleys	12.00 to 12.50

BUNDLED SHEETS

Buffalo	7.00 to 7.50
Cinci., deal.	8.75 to 9.25
Cleveland	7.00 to 7.25
Eastern Pa.	9.00
Pittsburgh	11.00 to 11.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	5.50 to 6.00
Cincinnati	5.00 to 5.50
Detroit, dealers	6.00 to 6.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	5.50 to 7.00
Buffalo	13.75 to 14.25
Chicago (3 ft.)	12.25 to 12.75
Chicago (2 ft.)	12.75 to 13.25
Cinci., deal.	15.50 to 16.00
Detroit, deal.	12.50 to 13.00
Pitts. (open-hearth, 3 ft. and less)	14.50 to 15.00
St. Louis	13.50 to 14.00

STOVE PLATE

Birmingham	8.00 to 8.50
Boston, con.	8.00 to 8.50
Buffalo	9.50 to 10.00
Chicago, net	7.75 to 8.25
Cinci., deal. net	5.25 to 5.75
Det., net, deal.	6.25 to 6.75
Eastern Pa.	9.00 to 9.50
N. Y., deal. mill	4.75
St. Louis	8.00 to 8.50

COUPLERS, SPRING

Buffalo	13.50 to 14.00
Chicago	12.00 to 12.50
Eastern Pa.	16.50
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50

ANGLE BARS—STEEL

Chicago	11.50 to 12.00
St. Louis	9.50 to 10.00

LOW PHOSPHORUS

Buff., billets and bloom crops	15.00 to 15.50
Cleveland bil. and bloom crops	16.50 to 17.00
Eastern Pa.	17.00
Pittsburgh billet bloom crops	17.00 to 18.00
Pitts. sheet bar crops	16.50 to 17.00

FROGS, SWITCHES

Chicago	10.75 to 11.25
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	10.00 to 10.25
Cleveland	6.50 to 7.00
St. Louis	9.50 to 10.00

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	8.50 to 9.00
Buffalo, No. 2	11.00 to 11.50
Chicago, No. 1	9.50 to 10.05
Chicago, No. 2	10.00 to 10.25
Cinci., No. 2	9.50 to 10.00
Eastern Pa.	12.50 to 13.50
N. Y., No. 1 deal.	10.00 to 10.50
Pitts., No. 2	12.50 to 13.50
St. Louis, No. 1	7.75 to 8.25
St. Louis, No. 2	9.50 to 10.00

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	11.50 to 12.00
N. Y., deal.	7.25 to 7.50

BUSHELING

Buffalo, No. 1	9.25 to 9.75
Chicago, No. 1	8.50 to 9.00
Cinn., No. 1 dl.	8.00 to 8.50
Cinn., No. 2	4.50 to 5.00
Cleve., No. 2	6.00 to 6.25
Det., No. 1 new deal.	8.25 to 8.75
St. L., No. 1	7.00 to 7.50
Val. new No. 1	11.50 to 12.00

MACHINE TURNINGS

Birmingham	7.00 to 8.00
Boston, dealers	2.00 to 2.50
Buffalo	6.00 to 6.50
Chicago	4.25 to 4.75
Cinn., deal.	4.50 to 5.00
Cleveland	4.75 to 5.25
Detroit	4.25 to 4.75
Eastern Pa.	7.00 to 7.50
N. Y., deal.	3.00
Pittsburgh	6.00 to 6.50
St. Louis	4.00 to 4.50
Valleys	6.00 to 6.50

BORINGS AND TURNINGS For Blast Furnace Use

Boston	2.00 to 2.60
Buffalo	6.25 to 6.75
Cinn., deal.	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, deal.	5.50 to 6.00
Eastern Pa.	6.00 to 7.00
N. Y., deal.	3.00
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.00 to 8.00
Boston, chem.	9.10 to 9.60
Boston, deal.	2.00 to 2.50
Buffalo	6.50 to 7.00
Chicago	5.00 to 5.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, deal.	5.25 to 5.75
Eastern Pa.	7.00 to 7.50
E. Pa., chem.	13.50 to 14.50
N. Y., deal.	3.50
Pittsburgh	7.75 to 8.25
St. Louis	6.00 to 6.50

PIPE AND FLUES

Cinn., deal.	7.50 to 8.00

RAILROAD GRATE BARS

Buffalo	7.25 to 7.75
Chicago, net	8.00 to 8.50
Cincinnati	7.00 to 7.50
Eastern Pa.	9.00 to 9.50
N. Y., deal.	6.00
St. Louis	7.50 to 8.00

FORGE FLASHINGS

Boston, deal.	6.00 to 6.25
Buffalo	9.00 to 9.50
Cleve. ov. 10 in.	8.00 to 8.50
Detroit	8.00 to 8.50

FORGE SCRAP

Boston, del.	5.50 to 6.00
Chicago	13.50 to 14.00
Eastern Pa.	11.00

ARCH BARS, TRANSOMS

Chicago, net	11.50 to 12.00
St. Louis	11.50 to 12.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	10.50 to 11.00
Chi., steelworks	9.00 to 9.50
Cleveland	8.00 to 8.50
Eastern Pa.	11.00
Pittsburgh	10.50 to 11.00
St. Louis	7.50 to 8.00

STEEL CAR AXLES

Birmingham	14.00 to 14.50
Boston, ship. pt.	14.00 to 15.00
Buffalo	15.50 to 16.00
Chicago	14.60 to 15.10
Eastern Pa.	18.50 to 19.50
St. Louis	14.50 to 15.00

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	12.90 to 13.45
N. Y., deal.	13.00 to 14.00
St. Louis	12.00 to 12.50
E. Penna.	18.00

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.00 to 13.50
Buffalo, steel	13.50 to 14.00
Chicago, iron	11.00 to 11.50
Chi., roll steel	13.50 to 14.00
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	15.50 to 16.00
E. Pa. iron	13.50 to 14.00
Pitts., iron	13.50 to 14.00
Pitts., steel	16.00 to 16.50
St. Louis iron	10.50 to 11.00
St. Louis, steel	13.25 to 13.75

NO. 1 CAST SCRAP

Birming., cup.	9.50 to 10.00
Buffalo (mach.)	10.50 to 10.75
Boston, textile	11.50 to 12.00
Chicago, mach.	10.65 to 11.20
Chi., railroad	10.10 to 10.65
Chicago, agri.	9.50 to 10.10
Cinn., mach. cup., gross	13.50 to 14.50
Cleve. cupola	12.00 to 12.50
Det., net deal.	8.50 to 9.00
E. Pa. cupola	13.00
N. Y. cup. deal.	8.00 to 8.50
N. Y., del. local foundries	12.00
Pitts., cupola	12.50 to 13.00
San Fran., del.	13.50 to 14.00
Seattle	8.50 to 9.00
St. L. No. 1 ma.	9.75 to 10.25
St. L. No. 1	9.00 to 9.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast.	11.50 to 12.50
Buffalo, break	7.00 to 7.50
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	6.50 to 7.00
Eastern Pa.	11.00
N. Y. No. 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.00 to 7.50
Pittsburgh	10.50 to 11.00

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	12.50 to 13.00
Chicago, agri.	11.00 to 11.50
Chicago, R. R.	12.75 to 13.25
Cinn., R. R. dl.	12.00 to 12.50
Cinn., agri., dl.	12.00 to 12.50
Cleve., rail	12.00 to 12.50
Det. auto deal.	11.00 to 11.50
St. Louis, rail	10.50 to 11.00

RAILS FOR ROLLING 5 feet and over

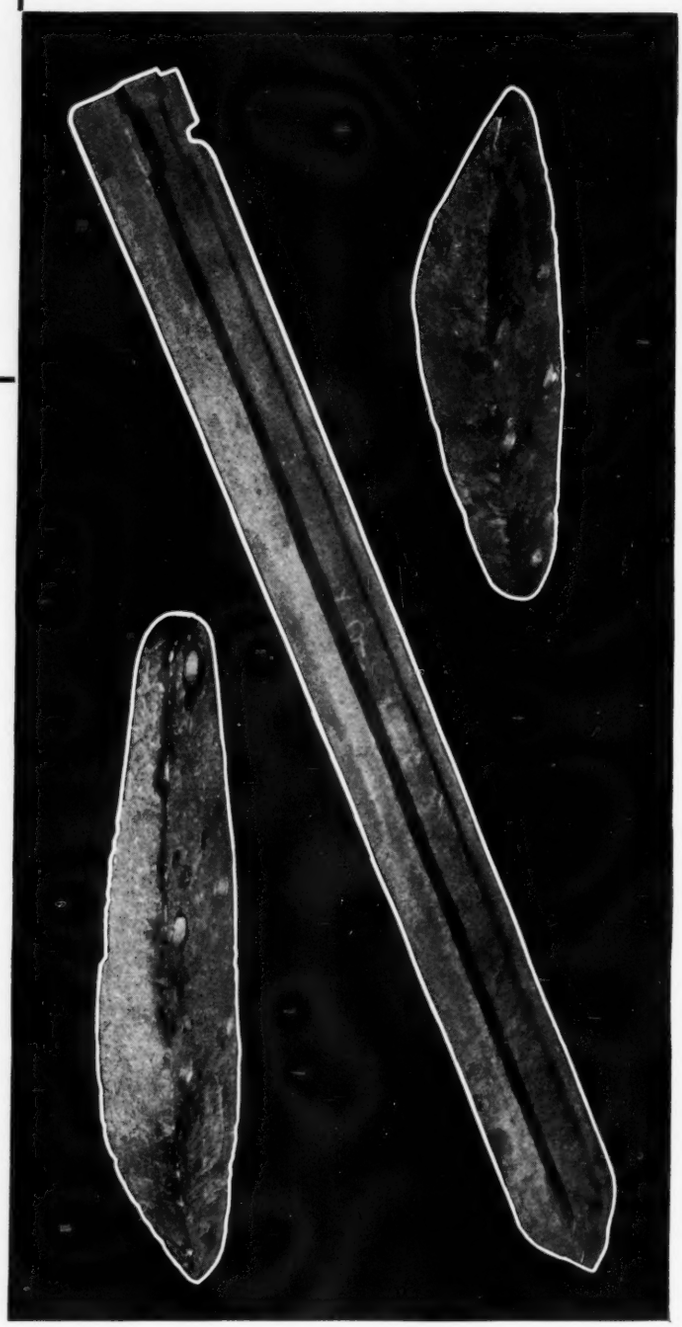
Birmingham	11.25 to 11.50
Boston	8.50 to 9.00
Buffalo	10.25 to 10.75
Chicago	13.00 to 13.50
Eastern Pa.	13.00 to 13.50
New York	9.00 to 9.50
St. Louis	11.25 to 11.75

LOCOMOTIVE TIRES

Chicago, cut	13.00 to 13.50
St. L. No. 1	11.00 to 11.50

LOW PHOS. PUNCHINGS

Chicago	11.50 to 12.00
Buffalo	14.00 to 14.50
Eastern Pa.	15.50 to 16.50
Pittsburgh	15.00 to 15.50



"CUM-LOY"

Tensile strength
110,000 to 200,000 lbs.

Elastic limit
80,000 to 160,000 lbs.

Where unusual conditions demand unusual castings, "West 110—CUM-LOY" meets the need. It is especially good for Die Blocks, Gyratory and Stamp Crusher parts, Digger Teeth, Bucket Lips, and all such parts subjected to extraordinary abrasive action and it has the necessary toughness and durability to meet your requirements.

THE WEST STEEL CASTING CO., *Cleveland, Ohio*

WEST STEEL
QUALITY SERVICE

—BETTER STEEL CASTINGS—

in 25 cents of the 1921 low. Foundry cast grades are moving slowly. Occasional rush orders for early shipment indicate that smaller foundries have short stocks. Cast borings have regained their range of $5 to $5.50 despite an order taken in the St. Louis district at $4, Chicago switching district.

Boston—Prices for scrap material rule firm. Whether the downward trend has been arrested remains to be seen. The fact that no business has been done leaves the price situation perplexing and price uncertain.

New York—Although the American Radiator & Standard Sanitary Corp., has closed on a tonnage of stove plate at $8.25, delivered, a reduction of 25 cents, the dealers' buying market here is unchanged. Continued decline in demand for wrought scrap, however, has made the market on this material virtually nominal. Trading in scrap generally remains light, although there is a somewhat better movement against old contracts.

Philadelphia—Sales of No. 1 railroad malleable in at least two instances at $12.50, or $1 under the previous level are the only exceptions to small and moderate lots at unchanged prices. Recession in activity of steel and iron scrap at Pittsburgh has caused a somewhat easier tone here.

Pittsburgh—Steel and iron scrap is slightly easier on recent buying, with the market quieter on month-end influences. More heavy melting steel has been sold at $13, but in view of some sales above this figure the market is quotable at $12.50 to $13.50, against $13 to $13.50 recently. Dealers are able to pick up some tonnage at the lower figure. Quotations on most other grades are steady. The Pennsylvania railroad offers 10,500 net tons of heavy melting steel in its monthly list of 38,000 tons. This is the first heavy melting steel offered in four months.

Buffalo—Releases have been given on practically all materials except No. 1 heavy melting steel. Active inquiry for stove plate has developed, revealing a shortage of material here and causing higher prices.

Cleveland—Steel and iron scrap shows further weakness this week, following announcement by a large steelworks consumer that it would receive no more material on orders before March 15. Consumption of scrap in this district is now confined to foundries since the second mill interest has taken material only from its railroad source during the past several months. Several grades are quoted lower. No. 1 heavy melting steel remains unchanged at $10 to $10.50 and No. 2 at $9.75 to $10. Scrap is moving to the valleys in slightly better volume. Quotations there are unchanged.

Detroit—In spite of continued lack of buying of steel and iron scrap prices are nominally unchanged, but exhibit added firmness. Sentiment is that lower prices are not likely and buying would cause some advance.

Cincinnati — Quotations on cast iron borings, and borings and turnings were increased 50 cents, at $4.50 to $5, on a sale of fair tonnage to a mill in this district. This marks the first increase on iron and steel scrap in more than six months, and tended to firm the quotations on other grades.

St. Louis—While purchasing of iron and steel scrap is in small volume, releases are fairly large, and all material is readily absorbed. Prices remain steady at the levels of recent weeks. The melt is picking up slowly.

Birmingham, Ala.—More old material is moving than for some time. Heavy melting steel is quoted at $9.50 to $11.

Toronto, Ont.—Demand for iron and steel scrap in Toronto and Montreal markets is spotty. Early in the week sales showed improvement, but demand fell sharply in the closing days. Foundries are taking regular shipments against contract and there is a fairly good movement of iron grades on spot delivery account. Dealers are still out of the market.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Improvement Restricted to Foundry Grades—Connellsville Output Largest Since August

COKE PRICES, PAGE 80

Pittsburgh—Beehive coke demand lacks additional improvement but continues slightly heavier than a month ago. Most of the gain is confined to foundry coke, the furnace grade remaining quiet. Furnace fuel still is $2.50. Foundry coke is $3.25 for the lower grade to $4.85 for premium brands. Demands for heating coke is spotty, but light in the aggregate.

Beehive production shows further increase. Output in the week ending Jan. 17 was 20,450 tons, against 19,130 the week preceding and 30,370 tons a year ago, according to the *Connellsville Courier*. This was the largest weekly output since last August.

Boston—Producers report foundries are deferring coke shipments. Demand for domestic grades continues good.

New York—The movement of metallurgical coke continues slow, with prices unchanged. Beehive furnace coke is $2.50 to $2.60, Connellsville, Pa. Standard grades of beehive foundry coke are $3.50 to $3.75, Connellsville, with premium brands $4.70 to $4.85, Latrobe, Pa. By-product foundry coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

Chicago—By-product coke shipments are gaining over December. The Chicago oven price is $8. Portsmouth, O., coke is now being sold in Michigan territory at the usual price based on $6, ovens.

Cincinnati—Specifications for by-product foundry coke are small, the improvement in the melt being slow and counteracted by heavier shipments earlier this month. Prices are unchanged.

St. Louis—Coke shipments in January have averaged slightly higher than the December daily average, though considerably below January, 1930. New sales are light.

Birmingham, Ala.—Coke consumption in Alabama is increasing as foundries report better demand for castings. More ovens will be relighted next week. Shipments from the district are small. Prices are unchanged.

Pacific Coast

Seasonal Factors Slacken Demand but Sales Run Close to Total of 1930—Pending Projects Promise Better Buying Soon—Small Consumer Stocks Give Hope for Future

Seattle—Awards of steel in this district this week approximated 1000 tons. While some branches of the industry report slow pickup after the holidays, considerable tonnage of importance is pending for immediate action. The largest project is the Ford assembly plant, Seattle, involving nearly 3500 tons. Revision of plans is under way and with representatives of the architects on the ground, definite action is expected shortly.

Bars, Plates and Shapes

Merchant bars are in poor demand and moving slowly. Mill prices are unchanged at 2.25c while reinforcing is steady at 2.30c. Local mills have a fair tonnage on books but not much new work has recently developed. Awards of reinforcing include 400 tons to the Northwest Steel Rolling Mills, Seattle, for the Edmond Meany hotel, Seattle, and about 300 tons to unnamed interests for several state highway bridges in Oregon. Projects pending are 200 tons for the substructure of the Seattle federal building, bids Jan. 26, a state bridge in Skagit county, Wash., 200 tons, general contract awarded; and 100 tons in a proposed viaduct to be built by Seattle, bids Jan. 30. An unstated tonnage is involved in reconstruction of the Hawthorne bridge, Portland, Oreg., general contract to Eldefsen-Weygrandt Co., Portland. Two concrete bridges are included in bids to be opened by the Washington highway commission, Feb. 17.

Barde Steel Co., Portland, will furnish 100 tons or more for a river steamer to be built in that city by the Albina Marine Iron Works for the Hawkins Transportation Co. Mill prices of plates range from 2.10c up.

Only one award of shapes, 105 tons for the Nooksack bridge, Washington, to the Isaacson Iron Works, Seattle, was announced this week. Projects pending include 1200 tons for additional gates at the Rock Island dam project, Washington, 600 tons for the telephone building at Tacoma and 315 tons for a bridge at Tacoma, general contract to the Hart Construction Co., of that city. Prices are fairly firm at 2.20c to 2.25c.

Finished Materials

Wholesale jobbers report inquiry slack and the volume of trade below normal. Buying is hesitant and confined to small tonnages to cover immediate necessities. However, stocks are low and there is every promise of improved conditions. Price lists are being well maintained both here and in Portland territory.

Pipe Sales Are Small

Business this week was confined to small lots sold out of stock but three municipal projects, involving about 1000 tons of cast iron, are up for figures within the next few days. These include more than 500 tons for Tacoma, 200 tons for Puyallup and 233 tons for Aberdeen, Wash.

Old Materials Move Better

Steel mills have lifted the holiday embargo on scrap and shipments have been resumed. Prices range from $8 to $9, according to grade, and other special conditions. Receipts are equal to present needs. Shippers are more discriminating since the recent drop in prices.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

New Inquiries Are Few

San Francisco—(*By Air Mail*)—Improvement in demand for steel products on the Pacific Coast is slow and few new inquiries of importance came out for figures this week. Construction and building operations have slowed down, due to rainy weather. The most encouraging feature lies in the fact that stocks of steel in consumers' yards are sufficient for only current business.

Bars, Plates and Shapes

Awards of concrete bars this week aggregated 920 tons and brought the total for the year to 3014 tons as compared with 1556 tons for the corresponding period a year ago. W. S. Wetenhall Co. secured 200 tons for a warehouse in San Francisco and 100 tons for a telephone building in Ripon, Calif. The Truscon Steel Co. booked 480 tons for a school in San Francisco and an unnamed company took 100 tons for a hospital annex in Riverside. Bids will be opened Feb. 9 for 102 tons for a subway in Santa Ana and bids have been opened on 450 tons for two institute buildings for San Francisco. No change in out-of-stock quotations is noted, 2.50c, base, on carload lots being firm in both San Francisco and the Los Angeles districts.

Plate business was limited to unimportant lots and no new inquiries involving over 100 tons were noted. It is expected that the 1300-ton pipe line at Chelan, Wash., will be placed next week. Prices remain unchanged at 2.05c to 2.15c, c.i.f.

Structural shape awards totaled 2302 tons and brought the aggregate for the year to 4585 tons, compared with 4626 tons for the same period last year. The Consolidated Steel Corp. and the International Derrick Co. each booked 1000 tons for towers for the Southern Sierras Power Co., Riverside, Calif. Bids will be opened Feb. 9 for 154 tons for a subway in Santa Ana, Calif. McClintic-Marshall Co. is low bidder on 270 tons for two institute buildings in San Francisco. The Southern Pacific Co. has opened bids on 145 tons for the Seventh street crossing in Oakland. Prices on plain shapes range from 2.15c to 2.25c, c.i.f.

Other Finished Material

No awards of importance were reported this week in the cast iron pipe market. Aberdeen and Puyallup, Wash., have opened bids on 233 tons of 4 to 8-inch and 169 tons of 4 and 6-inch pipe, respectively.

Ryerson Buys Part of Kempsmith Miller Lines

Joseph T. Ryerson & Son Inc., Chicago, has bought from the Kempsmith Mfg. Co., Milwaukee, the goodwill, patents, patterns, inventory and other assets pertaining to its lines of maximillers, production millers and automatic indexing machines. The cone drive milling machines manufactured by the Kempsmith company are not involved in this purchase. Sidney Machine Tool Co., Sidney, O., manufacturer of engine lathes, will take over for the Ryerson company full manufacturing responsibilities for building the former Kempsmith products. H. L. Livesay, formerly factory manager of the Kempsmith plant, will be in full charge of milling machine production at Sidney.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.....$37.00 to 38.00
Four-inch, Birmingham..... 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago..... 45.20 to 46.20
Six-inch and over, N. Y..... 37.50 to 39.50
Four-inch, New York..... 40.50 to 41.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia..	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans. ..	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia..	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga..	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia..	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.40c
New York(d)	3.30c
Philadelphia..	2.50c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga..	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†	3.60c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.35c
Seattle	4.50c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.40c-4.60c
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York	4.00c-4.10c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.00c
San Fran.	5.00c
Seattle	5.00c
St. Louis	4.60c
St. Paul	4.23c
Tulsa	4.60c-4.75c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga..	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia..	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia..	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.30c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

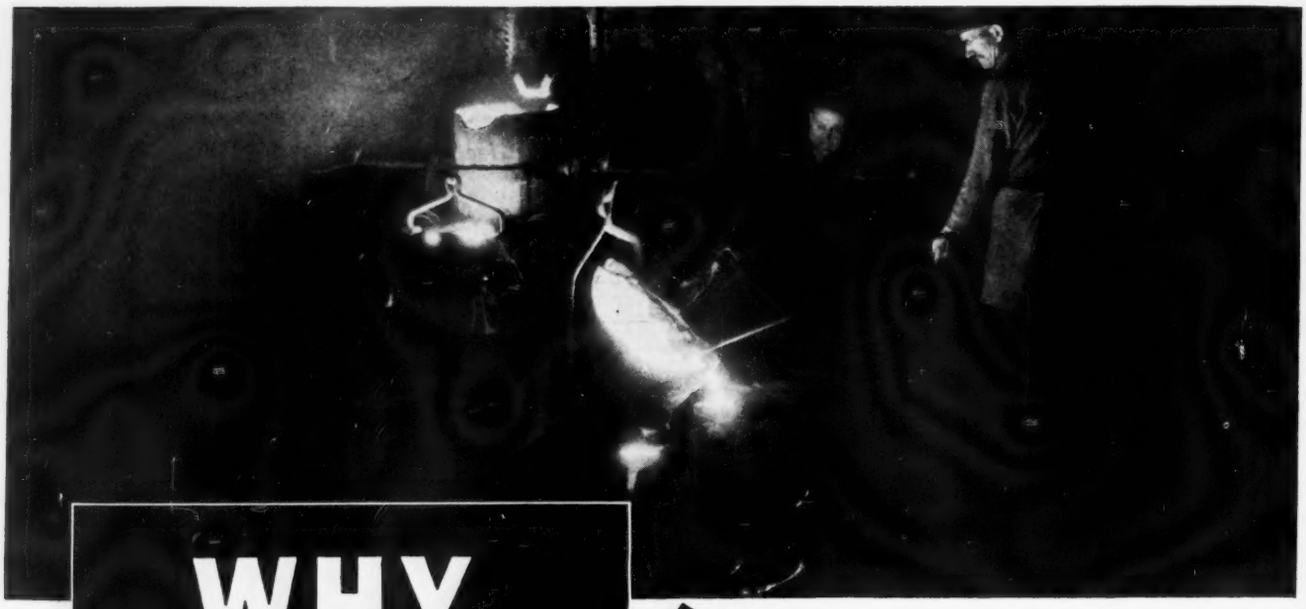
Flats and squares 5c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c)	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

YOUR CASTINGS . . . *made with Charcoal Pig Iron have* . . . GREATER DENSITY • ADDED TOUGHNESS • MORE STRENGTH • NO SHRINKAGE • LESS SCRAP LOSS • GREATER UNIFORMITY • EASIER MACHINABILITY . . . *and you get higher quality finished products.*



WHY we say..."Specify Charcoal Pig Iron"

A small change of iron in your castings gives added strength

YOUR product may get an overload you couldn't foresee. With a small percentage of charcoal iron in your castings, you've done a lot to guard against a breakdown . . . to guard your customer from the trouble of a costly replacement.

That's true because you get extra strength when you specify a portion of Superior Charcoal Pig Iron in the mix. Your foundryman will tell you of other added qualities you get in this way, too.

Your castings will have greater toughness and density . . . little shrinkage . . . and the foundry will have less scrap loss (which saves you money in the end).

It's easy to get this added safeguard . . . and the other qualities . . . in your castings. Specify "All castings must contain 15% to 20% Superior Charcoal Pig Iron". Superior Charcoal Iron Co., Grand Rapids, Michigan.

Superior Charcoal Pig Iron

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 10.00c, Conn., for copper

Sheets	
Yellow brass (high)	17.12½
Copper, hot rolled	19.75
Lead, full sheets (cut ½c more)	8.75
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	22.00
Seamless copper	22.12½
Rods	
Yellow brass (high, full turnings)	15.37½
Naval brass	16.37½
Anodes	
Copper, untrimmed	17.25
Wire	
Yellow brass (high)	17.62½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	6.25 to 6.50
Cleveland	7.00 to 7.50
St. Louis	6.75 to 7.00
Heavy Yellow Brass	
New York	4.75 to 5.00
Heavy Copper and Wire	
New York	7.75 to 8.00
Boston	7.25 to 7.50
Chicago	7.25 to 7.75
Cleveland	7.25 to 7.50
St. Louis	6.50 to 7.00
Red Brass Borings	
New York	6.75 to 7.00
Yellow Brass Tubing	
Cleveland	4.00 to 4.50
Light Copper	
New York	6.75 to 7.00
Chicago	6.00 to 6.50
Cleveland	6.50 to 7.00
St. Louis	6.50
Light Brass	
Boston	3.50 to 3.75
Chicago	4.25 to 4.50
Cleveland	3.25 to 3.50
St. Louis	3.75 to 4.00
Zinc	
New York	2.00 to 2.25
Cleveland	1.25 to 1.75
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	8.50 to 9.00
Borings, Cleveland	4.50 to 5.00
Mixed cast, Cleveland	5.50 to 6.00
Mixed cast, Boston	4.50 to 5.00
Mixed cast, St. Louis	4.25

Secondary Metals

Remelt aluminum No. 12	11.50 to 12.50
Brass ingots, 85-5-5-5	10.00

Quicksilver at $105

New York—Quicksilver is moderately active at the unchanged level of $105 a flask for small spot lots.

Metals

Producers Hold Prices Steady Despite Lack of Buying—Outside Market Copper Is Shaded

New York—Quiet but steady markets prevail in nonferrous metals. New business in all the metals and metal products remains light. In some past periods such quietness has resulted in lower prices, but much resistance is shown at present because prices had previously fallen far and resulted in curtailed production.

Steadiness is based partly on the expectation that demand will improve gradually within a month or two.

Copper—Outside market copper has been offered for resale in the past few days at 9.75c, Connecticut, but users have not been much interested. The latter have been well covered on their immediate needs for some time, and until late Monday, the resale metal was for prompt shipment, only. Custom smelters, while not getting much domestic business, have held their asking price at 10.00c, Connecticut. Export business has fallen off to several hundred tons a day, whereas it had been running around 2000 tons a day.

Zinc—New business has shown little improvement, but most smelters of prime western appear to be less anxious to sell than they were a week or so ago. The result is that the market for prompt is a little firmer at 4.00c to 4.02½c, with some asking prices a trifle higher, while on forward shipments the premium of 2½ to 5 points a month is asked. The Joplin ore market is firm at $26, with mining companies apparently not selling as much as they could. On the other hand, unsold stocks of ore are increasing. High grade metal remains unchanged at 1 cent over prime western.

Tin—This market has had its usual ups and downs in the past week, but has remained close to 26.00c a pound for spot. A little business has been done on the price dips, with buyers usually refusing to follow the market up. Firmness usually follows some news or gossip about the plan of export quota limitation. It is generally understood that the plan has been informally adopted but needs final approval. Statistics continue decidedly adverse to price strength.

Lead—New business is confined mostly to small lots for prompt shipment, but prices are steady.

Aluminum—New business remains small for virgin metal, but a little improvement in remelt is reported from some sections of the country. Prices are unchanged.

Coke By-Products Steady; Benzol Prices Easier

New York—Benzol has weakened to 20.00c despite continued curtailed output and a fair demand. Stocks are not accumulating. Producers say substantial increase in buying would result in firmer prices. Toluol is steady on a slightly increased volume, reflecting a better lacquer demand which may be traced to improved automobile production. Xylol and solvent naptha are unchanged.

Shipments of naphthalene against early contracts are well along at unchanged prices. Some spot business also is being done. The disinfectant trade is taking naphthalene in about the same volume as last year. Sulphate of ammonia is firm with an increase in demand.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.95 to $2.00

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Jan. 21	10.00	10.12½	9.80	26.37½	26.75	4.75	4.55	4.00	22.90	7.37½	35.00
Jan. 22	10.00	10.12½	9.75	25.87½	26.12½	4.75	4.55	4.00	22.90	7.37½	35.00
Jan. 23	10.00	10.12½	9.75	26.00	26.30	4.75	4.55	4.00	22.90	7.37½	35.00
Jan. 24	10.00	10.12½	9.75	26.00	26.37½	4.75	4.55	4.00	22.90	7.37½	35.00
Jan. 26	10.00	10.12½	9.75	25.75	26.00	4.75	4.55	4.02½	22.90	7.30	35.00
Jan. 27	10.00	10.12½	9.75	26.05	26.37½	4.75	4.55	4.05	22.90	7.25	35.00

Europe

Scotch Pig Iron and British Galvanized Sheets Reduced—Continent's Position Worse

London—(*By Radio*)—Further price adjustments have been made in the British iron and steel markets. This week Scotch pig iron has been reduced 2 to 3 shillings (49 to 73 cents a ton). Three blast furnace stacks are to be restarted. The pig iron market is less vulnerable to continental competition.

Galvanized sheets have been marked down $1.22 a ton to the lowest price since the war. Some of the British steelworks are busy with large orders placed recently but new business is dull. A large order for rails and steel ties and for 14 steel cars has been booked for South Africa. A rail and car order also has been placed for Jamaica. Continental competition in the steel market still is keen. The market for tin plate is steadier and inquiries are improving.

Belgian markets are quiet and prices weakening, according to STEEL'S report from Brussels. Signs of unemployment are beginning to appear in France. In Germany domestic iron and steel prices have been reduced and many companies are dismissing employes.

Germany Sees 1931 Worse Steel Year Than 1930

Berlin—According to an estimate of the Verein Deutscher Eisen-und-Stahl-Industrieller, the German output of raw steel in 1930 totaled 11,500,000 metric tons, against 16,246,000 tons in 1929, and that of pig iron was 9,700,000 tons, compared with 13,401,000 tons. At present there is every likelihood that 1931 will prove worse than 1930, owing to depressed conditions in the iron and steel industry.

Almost every day new reports of dismissals of workers are published. In the combine of the Vereinigte Stahlwerke, the Ruhrort-Meiderich smelter is planning to lay idle some plants Feb. 1, by which action 3700 out of 7000 workers will be affected. The Hoerder Verein is, as a matter of precaution, giving notice to its entire staff of 400 workers and 500 employes, and for the same reason the Mitteldeutsche Stahlwerke also is giving notice to several hundred of its employes. The Peine rolling mill and the Ilseder Huette have been laid idle, due to a strike of workers. On the other hand, it should be mentioned that the Barop rolling mill and the Doehlen Cast Iron Co. have resumed operations.

Uncertainty with regard to the pending reduction of domestic prices is still further accentuating the reluctance of domestic consumers. It is expected that prices will be reduced by the same percentage as that at which the wages of the Ruhr coal miners are to be cut, but the decision in regard to wages in the coal industry has not yet been taken. In the pending negotiations the official arbitrator has proposed a reduction of these wages by 6 per cent, which, however, has not met with approval of both parties interested, so that a new meeting is shortly to be held. An unimportant strike broke out in the Ruhr coal mines, but this has been settled. By Jan. 15 the 295,000 Ruhr coal miners will have received notice of a reduction of wages.

Domestic sales, as already mentioned, are small, and consumers are covering only their most urgent needs. The stocktaking period and the holidays have accentuated reluctance still further. Demand for bands has been at the same rate as during December. Sales of merchant bars, pipe and of most other products

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, January 26	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$14.22	2 18 6*	$12.64	2 12 0	$12.64	2 12 0	$12.15	2 10 0
Basic-bessemer	14.58	3 0 0	11.66	2 8 0	11.66	2 8 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.01	3 10 0	.....	.....	.....	.....	17.01	3 10 0
SEMIFINISHED STEEL								
Billets	$27.34	5 12 6	$17.50	3 12 0	$17.50	3 12 0	$17.50	3 12 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.68c	7 15 0	.90c	4 1 0	.90c	4 1 6	.96c	4 7 0
Structural shapes	1.68c	7 15 0	.80c	3 12 6	.80c	3 12 6	.81c	3 14 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.03c	4 13 6	1.03c	4 13 6	1.06c	4 16 0
Sheets, black, 24 gage	1.90c	8 15 0	1.78c	8 1 6	1.78c	8 1 6	1.93c	8 15 0
Sheets, galvanized, 24 gage, corrugated	2.44c	11 5 0	2.35c	10 13 9	2.35c	10 13 9	2.31c	10 10 0
Bands and strips	2.06c	9 10 0	1.02c	4 12 6	1.02c	4 12 6	1.01c	4 12 0
Plain wire, base	2.06c	9 10 0	1.13c	5 2 6	1.13c	5 2 6	1.23c	5 12 0
Galvanized wire, base	2.39c	11 0 0	1.49c	6 15 0	1.49c	6 15 0	1.54c	7 0 0
Wire nails, base	2.39c	11 0 0	1.16c	5 5 0	1.16c	5 5 0	1.23c	5 12 0
Tin plate, base box 108 pounds	$3.83c	0 15 9	.....	.....	.....	.....	$ 8.26	1 14 0
Domestic Prices at Works or Furnace—Last Reported				French Francs		Belgian Francs		Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$14.22	2 18 6	$11.37	290(2)	$13.95	500	$19.73	83
Basic pig iron	14.58	3 0 0	12.74	325(1)	12.56	450	21.04	88.50
Furnace coke	2.92	0 12 0	6.59	168	5.02	180	5.09	21.40
Billets	27.34	5 12 6	19.21	490	18.55	665	27.93	117.50
Standard rails	1.79c	8 5 0	1.41c	785	1.59c	1,220	1.46c	136
Merchant bars	1.68c	7 15 0	.97c	540	.96c	740	1.47c	137
Shapes	1.84c	8 10 0	1.12c	620	.93c	715	1.43c	134
Plates, ship, bridge and tank	1.95c	9 0 0†	1.37c	760	1.14c	875	1.64c	153
Sheets, black, 24 gage	1.90c	8 15 0	2.33c	1,295	2.34c	1,800	1.34c	126
Sheets, galvanized 24 gage, corrugated	2.44c	11 5 0	2.88c	1,600	2.73c	2,100	3.64c	340
Plain wire	2.06c	9 10 0	2.16c	1,200	2.15c	1,650	2.32c	217
Bands and Strips	2.06c	9 10 0	1.24c	690	1.43c	1,100	1.70c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

The Behavior of Bends must be Better than good-

when the un-expected happens

THE time to make sure that the piping, particularly the bends, will stand up and take the punishment incident to sudden changes in operating conditions—is when the pipe is selected for the job.

Skillful design and expert installation will not compensate for inadequate material. The foundation of successful pipe performance is—advanced methods of manufacture and complete understanding of the service requirements.

The "NATIONAL" organization has consistently worked side by side with power specialists in developing piping material that will answer every rigid requirement of modern practice.

Whether welded or seamless material, there is only one standard of quality. Both are backed by the most exacting standards in manufacturing methods . . . a system of testing and inspection of acknowledged thoroughness, and the judgment of America's leading power plant specialists whose continued preference for NATIONAL has made it—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY
Subsidiary of United States Steel Corporation
PITTSBURGH, PA.

NATIONAL PIPE
WELDED OR SEAMLESS

are unsatisfactory. The Cölogne iron magnate, Otto Wolff, has again prolonged his agreement as selling agent for the thin sheets and tin plates of the Vereinigte Stahlwerke. Bredt & Co. has started the output of thin sheets, and thus has become the first outside producer of such sheets.

Export markets have not improved and the general tendency is weak. Producers have been trying to obtain additional orders, especially with regard to wire, although quotations for this material remain unchanged. German producers still quote £4 7s ($21.17) for merchant bars, which is above the price asked by the Belgians, so they are unable to book any orders worth mentioning. Sheet business also is quiet.

Sales of pig iron are further decreasing and stocks are accumulating. At the beginning of November stocks had grown to 931,300 metric tons, compared with 913,300 tons a month before and with 385,900 tons, the monthly average of 1929. Output had decreased in November to 636,600 metric tons, against 687,400 tons in October, further reductions being unavoidable. Foundries and machinemakers are unsatisfactory buyers.

Austrian Steel Industry Meets Heavy Shrinkage

Berlin—It is reported from Vienna, Austria, that, according to a report from the iron and steel syndicate, the activity of the works considerably decreased during 1930. Jan. 1, 1930, eight blast furnaces were operating in Austria, while Dec. 31 only one furnace was active. The number of open-hearth furnaces operating Jan. 1 was 68, but at the end of the year this number had dwindled to 20. During the first nine months production of pig iron decreased by 30.1 per cent, that of open-hearth steel by 22.2 per cent, that of merchant bars by 14.4 per cent and that of plates and sheets by 20 per cent. Works of the principal Austrian iron and steel concern, the Alpine Montangesellschaft, now has begun to reduce salaries and to dismiss a number of men.

Entente Cuts French Output

Paris—Production of pig iron and steel in France in November, 1930, reached low figures, because France has at last been compelled to limit her output in accordance with the decisions of the steel entente. Comparisons follow, in metric tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	131	433,940	390,580
1927	142	774,785	689,610
1928	153	841,415	782,995
1929	156	870,000	805,500
1930			
Jan.	156	875,000	800,000
Feb.	154	815,000	772,000
March	152	898,000	848,000
April	153	854,000	787,000
May	154	899,000	853,000
June	.....	841,000	753,000
July	147	861,000	790,000
August	143	845,000	775,000
Sept.	140	800,000	764,000
Oct.	139	827,000	797,000
Nov.	138	782,000	706,000

Belgian Market Nominal as Delay on Agreements Perils Steel Entente

Brussels—The period of Christmas and New Year holidays reduced to a standstill the iron and steel business of Belgium. Particularly from Great Britain, orders have been practically absent. It is expected that more time will have to elapse before it is possible to appreciate the exact position of the market and its tendency. In view of the absolute dullness of business, al prices are purely nominal. The case is cited of the Acieries du Nord et de l'Est, which had 1000 tons of billets to place and could not find a buyer at the Brussels iron and steel exchange meeting of Jan. 7. A few orders have been passed for merchant bars, and the price of £4 3s ($20.15) has been accepted for 500 tons.

So far as can be ascertained, the price level would be somewhat as follows: Blooms, £3 6s ($16); 2-inch billets, £3 12s ($17.45); sheet bars, £3 13s ($17.75); merchant bars, £4 3s ($20.15); beams, £3 13s ($17.75); and £3 15s ($18.25) for British sizes; Bands and hoops, £4 12s 6d ($22.45).

The pig iron market has not yet recovered from the disruption of the various international agreements, although an improvement has followed an arrangement arrived at between French, German and Saar producers. However, this arrangement is valid only for three months, and can hardly be considered binding, as the important works of Brebach, Roechling and Rombas have not yet sent in their agreement. The situation is considered with interest, because if an agreement is not arrived at between France, Germany and the Saar, the competition between France and Germany will become intense, and it might bring about disruption of the Roheisenverband, which would have a detrimental effect on negotiations now being carried out with a view to reorganizing the European steel entente. All other partial agreements which have been signed or are being negotiated also would fail to be carried out.

It is reported that the Belgian works are well provided with orders for semifinished steel, and that a certain tonnage has been retroceded to the German syndicate, this transfer having been effected by Ougree-Marihaye.

French Coke Totals Low

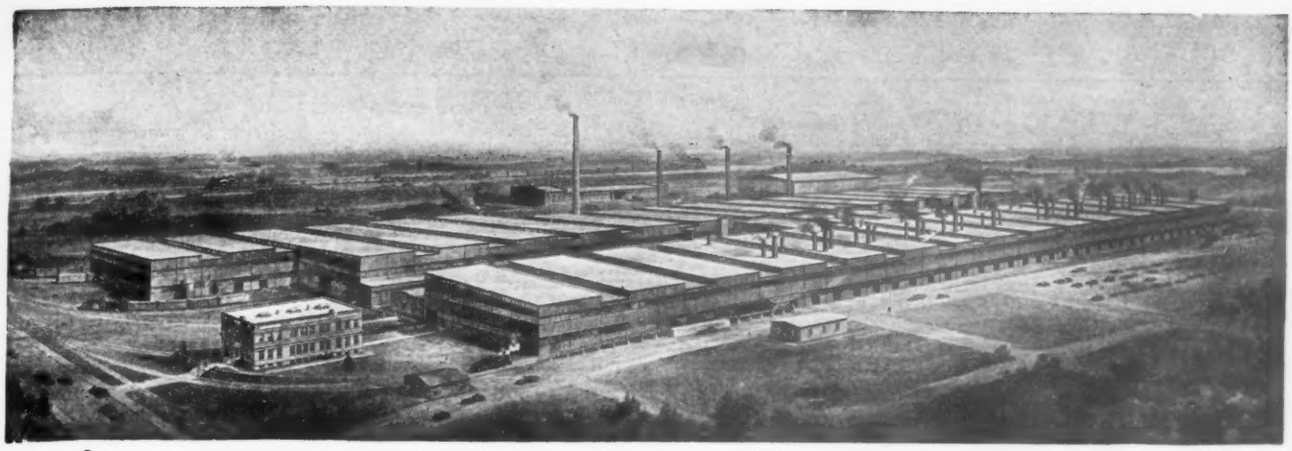
Paris—Output of metallurgical coke at French collieries in November, 1930, and imports and exports of coke were under those of October. Comparisons follow, in metric tons:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1929	397,435	453,720	39,070
1930			
Jan.	414,797	442,754	37,473
Feb.	392,950	403,887	15,905
March	443,909	385,742	11,779
April	419,348	450,437	13,371
May	426,327	386,422	21,605
June	416,992	386,359	24,333
July	427,121	352,388	40,460
August	422,526	369,741	39,947
Sept.	418,347	366,938	41,867
Oct.	431,893	351,975	39,617
Nov.	416,798	331,107	34,413

German Steel Exports Gain

Berlin—German exports of pig iron and ferroalloys in November, 1930, fell off from October, and exports of other iron and steel products gained. Imports of pig iron and ferroalloys in November, 1930, also exceeded these of October, and imports of other iron and steel products increased. Comparisons, in metric tons:

	— Imports —		— Exports —	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	23,895	217,505	29,910	347,645
1928	25,535	174,250	24,585	394,575
1929	14,765	137,435	36,115	448,330
1930				
Jan.	22,004	105,127	33,153	488,245
Feb.	13,597	98,397	24,271	409,822
March	16,777	107,401	25,983	465,166
April	12,032	113,195	18,364	405,633
May	16,070	114,548	23,164	439,791
June	13,669	88,342	18,814	341,828
July	14,689	90,630	16,811	332,546
August	12,495	91,539	12,929	324,751
Sept.	14,022	79,017	12,652	355,485
Oct.	15,498	83,071	16,138	331,976
Nov.	11,034	85,607	14,323	345,914



NORMITE SHEETS

for difficult stamping operations

Automobile Sheets

Deep Drawing and Extra Deep Drawing—
Hood and Fender Finish—Body Stock.

Metal Furniture Sheets

Full Pickled and Single Pickled
Cold Rolled Steel Sheets

Save With Steel

District Representatives

DETROIT, MICH.
Dean Higgins & Co.
614 Free Press Bldg.

TOLEDO, OHIO
Dean Higgins &Co.
906 Board of
Trade Building

CINCINNATI, O.
Dean Higgins & Co.
Union Central Bldg.

EASTERN STEEL NORMITE SHEETS

The EASTERN ROLLING MILL COMPANY
BALTIMORE MD.

Machinery

FOR the first time in months, one of the eastern railroads has released an inquiry covering a substantial number of machine tools, with an early release of this business appearing certain. Better feelings in all machine tool markets are developing, being inspired by orders for small tools and repair parts, and by equipment inquiries, rather than by more than scattering machine tool orders. Machine tool men who have visited the automobile shows, interpret added refinements and lowered prices as meaning that reduced factory costs are immediately necessary. New designs are being presented to the automobile builders on that basis.

New York—Improvement in machine tool inquiry and sales continues. The New York, New Haven and Hartford railroad has issued an inquiry for about 13 tools for its Van Ness shops, this being the first substantial inquiry in more than a year to be put out by any of the eastern carriers. For the past year railroad purchases have been limited to one or two tools at a time.

Included in the New Haven list are three engine lathes, one 42-inch boring mill, universal cutter grinder, two turret lathes, one combination punch and shear, two milling machines, two high-speed sensitive drills, one toolroom lathe and one power brake.

Increased interest in machine tools generally is more apparent, although it seems to be more pronounced upstate and in southern New England. While a fair volume of business being placed is the result of old inquiries which have come to life, a fair amount of fresh interest is also noted. A Schenectady refrigerator builder is increasing production almost 50 per cent. Standard motor builders in some instances are slightly more active, or at least maintaining production rates. January volume with most dealers and builders promises to excel that of any month in some time. Moderate budget releases are being made, with high production tools with new and improved engineering details leading in demand, but most sales still are confined to one or two units at a time.

Pittsburgh—Machine tool sales continue to lack improvement, while inquiry holds at its recently improved rate. Although the increased volume of inquiry improves the future outlook, development of this inquiring into orders will depend to a large extent upon the rate of improvement in general business. Recent buying has been scattered and involves no large orders, and most of the inquiry covers small, individual lots.

Worcester, Mass. — Norton Co. booked a large order this week from the Amtorg Trading Corp., New York. This represents the first impetus which has been given to the grinder market for weeks and has resulted in a certain amount of increase in productive operations. Otherwise the machinery market is dull, although there is some expectation that purchasing programs which have been budgeted for 1931 will soon begin to ripen into booked orders.

Cleveland—Aside from increased activity in small tools and a continuation of activity in machine tool inquiry, specific improvement in the condition of the equipment market is not in evidence. An improvement in general metalworking is indicated by an increasing number of orders for repair parts for machine tools. While this repair parts business has not assumed such proportions as to be of any particular interest from the standpoint of profits or added employment, it is an index of increased activity among machine tool users.

The Automobile show, which is in progress here this week, is being viewed with interest by machine tool men, who interpret added refinements and reduced prices of several of the popular cars as pointing to necessity of cutting factory costs. Those who have developed engineering improvements during the past several months are losing no time in presenting the cost saving features of their improved tools to the automotive industry. The automotive industry is reported to be in a receptive mood toward certain new and improved tools, only a mild business stimulus being needed to precipitate worthwhile orders.

Chicago—More inquiry is enlivening the machine tool market, but sales continue to be negligible. Scattered orders are pending, these including a number covering press equipment. Santa Fe is out for six grinders, a draw cut shaper, 36-inch railroad shaper, 16-inch lathe, 20-inch drill, 24-inch drill, rod grinder, pipe machine and 6-inch pipe cutting machine. In addition to a dozen items for the Milwaukee board of education, several items will be bought for a South Milwaukee school, including a 6 x 6-inch hack saw, three small motor-driven lathes, arbor press with pedestals, grinder and small drill. Tools also will be purchased for the Steuben junior high school, Milwaukee. International Harvester Co. is not planning any definite program now, but several smaller implement makers are said to be contemplating purchases this year. Rumors are heard of impending price advances in several lines.

Reports December Decrease in Hoist Business

New York—Electric Hoist Manufacturers association reports that the number of hoists ordered during December decreased 6.306 per cent as compared with the previous month, and the value of such orders increased 8.854 per cent as compared with November of 1930. Shipments were 4.416 per cent smaller in December than they were in November, 1930.

A regular meeting of the Electric Hoist Manufacturers association was held Thursday, Jan. 15 at Hotel McAlpin, New York. At that meeting, Harnischfeger Sales Corp., of Milwaukee, was elected to membership. The next meeting of the association at New York will be held in February.

Road Machinery Sales High

Chicago—Several road machinery manufacturers tributary to the Chicago district report 1930 the best year in their history. Purchases of finished steel by road machinery, excavating equipment and shovel manufacturers have become a leading outlet for finished steel products here since implement and automotive demand has remained at a low point.

Requirements of road building companies are increasing yearly. The equipment manufactured is of heavy type and, being subjected to hard usage, replacements are frequent.

Issues Specification

The American Society for Testing Materials new standard specifications for billet-steel concrete reinforcement bars, designated A 15-30, have been reprinted by the Concrete Reinforcing Steel institute, Tribune Tower, Chicago, for insertion in its handbook and are available to members of the institute upon request.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BRIDGEPORT, CONN. — Bridgeport Metal Goods Mfg. Co., 365 Cherry street, will build a plant at a cost of about $40,000. Unit will be 60 x 140 feet.

MERIDEN, CONN.—State industrial school for boys, R. L. McLaughlin superintendent, is having preliminary plans prepared for a shop and service unit to be erected at a cost of about $220,000. W. T. Arnold, 487 Main street, Hartford, Conn., is architect.

BOSTON—Colonial Scale Co., 110 High street, is inquiring for a 20 to 30-inch band saw, with or without motor.

BOSTON—Gerard Electric Co., 92 Pearl street, is reported to be in the market for metalworking machinery, including lathes and drills, and for compressors and motors.

PORTSMOUTH, N. H.—Bureau of supplies and accounts, navy department, Washington, will receive bids Feb. 10 on schedule 5004 for condensers and pumps, for delivery to the Kittery navy yard.

New York

LONG ISLAND CITY — General Bronze Corp., Tenth avenue, will receive bids after Mar. 15 for a plant which will be built according to private plans. (Noted Nov. 20.)

NEW YORK—United Electric Light & Power Co., 4 Irving place, will purchase equipment for Hell Gate's station steam generating plant.

NEW YORK—A. Pulise Casing Filler Mfg. Corp. has been incorporated with $10,000 capital by A. Ferme, 192 Bowery, to make casing filler machinery.

NEW YORK — Welded Fabrics Corp. has been incorporated with $1000 capital by J. A. Schaines, 295 Madison avenue, to deal in metal products.

NEW YORK—Bronx County Machinery Corp. has been incorporated with 200 common shares by Attorneys Albany Service Co., 299 Broadway, to deal in electrical machinery.

NEW YORK—New York Edison Co., 4 Irving place, has awarded contracts for buildings and equipment for augmenting facilities at the East River generating station. Total estimated cost, $5,500,000.

SYRACUSE—I. N. Beller Co. has been incorporated with $50,000 capital by Hancock, Dorr, Kingsley & Shove, to deal in machinery.

Pennsylvania

ERIE—Board of education proposes to build a high school at Tenth and Sassafrass streets, to be equipped with metalworking equipment. R. S. Scobell, Library building, is secretary of the board.

ERIE—Champion Dish Washing Machine Co., Hoboken, N. J., is altering the former plant of the Modern Tool Co. here and will move operations here about March 1. Patrick H. Davis is president.

McKEESPORT—Board of education, Dr. J. B. Richey superintendent, proposes to build an industrial school next summer, plans for which are being prepared. C. R. Moffit, 304 Masonic Temple, is architect. Approximate cost, $600,000.

OIL CITY—National Transit Pump & Machine Co., Seneca and Center streets, is in the market for cranes, from 5-ton to 25-ton size, for its new group of buildings. Among the 7 buildings recently noted as planned will be a 62 x 174-foot casting, welding and cleaning unit, 32 x 182-foot floor extension for cranes, and improvements to the light machine shop. Ford, Bacon & Davis, 39 Broadway, New York, are consulting engineers. (Noted Jan. 8.)

PHILADELPHIA—Foundry of the Victor V. Clad Co., manufacturer of hotel and restaurant supplies, Eleventh and Sansom streets, recently was damaged by fire.

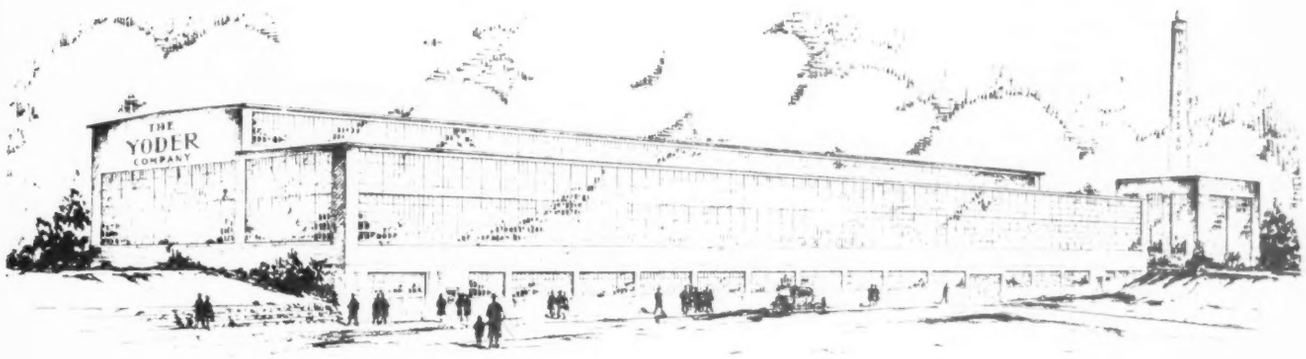
PHILADELPHIA—Ajax Metal Co., 46 Richmond street, has a building permit for a storage building to be erected at Frankford and Laurel streets. Cost is estimated at $115,000. M. Ward Easby Inc., 1705 Race street, is the contractor.

READING — Reading Sheet Metal Products Co. Inc., recently noted as having suffered fire damage to its plant, advises through E. S. Vande Mark, president, that large press equipment, tools and dies were not damaged. Light machinery was destroyed. Operations are being resumed in the plant recently vacated by the Reading Stove Works. (Noted Jan. 22.)

SHARPSVILLE — Sharpsville Boiler Works will award contract for a plant for the assembly of gasoline pumps. Approximate cost, $40,000.

WHEATLAND — Plant of the

Cleveland Machinery Manufacturer Builds New Unit



Construction work is going forward on the new plant of the Yoder Co., Cleveland, manufacturer of special machinery. The new unit is the first in an expansion program which will cost approximately $1,000,000 *including equipment, extended over a period of several years. The first floor of the new building will be used as a machine shop and for assembly of rolling machines. Casting storage will occupy the basement. Truscon Steel Co., Youngstown, O., furnishing steel sash and steel roof deck for the new plant, used rolls made by the Yoder Co.*

Sharon Steel Co. has been acquired by Philadelphia interests from Joseph Greenspon's Sons Iron & Steel Co., 3130 North Hall street, St. Louis. Plant will be used for the production of steel pipe.

New Jersey

MAPLEWOOD—LeRoy Schenck, 513 Valley street, will receive new bids about Mar. 1 for a 2-story shop and garage, cost of which is estimated at about $40,000. R. B. Flatt, 600 Bloomfield avenue, Bloomfield, N. J., is architect.

SECAUCUS—Curtiss Wright Airports Corp., 27 West Fifty-seventh street, New York, recently noted as proposing construction of an aviation center here, is having plans prepared for hangars, machine shops, garages and assembly plants. Stone & Webster Inc., 120 Broadway, New York, are supervising engineers. Eventual construction may bring the total expenditure to $10,000,000. (Noted Jan. 8.)

Ohio

CLEVELAND—Motor Saver Corp., 5005 Euclid avenue, advises through G. A. Bartholomew, general sales manager, that materials used in the manufacture of an automatic automotive device include steel bars, rod and sheet brass and small copper tubing. (Noted Jan. 22.)

LIMA—Plant of the Gorrell-Carnes Foundry Co., South Shawnee street, recently was damaged by fire. Principal damage, amounting to about $30,000, was confined to the office and to patterns.

MARION—Marion Mule Inc., subsidiary of Marion Steel Body Co., will start the manufacture of a haulage unit about April 1. Product has been manufactured in Bucyrus, O.

MARTINS FERRY—City council is considering installation of a new 2500-kilowatt turbine. Cost is estimated at $75,000. O. G. Frantz, service director, has been authorized to obtain a survey.

MIDDLETOWN — Shartle Brothers Machine Co., Homer Martindale general manager, manufacturer of paper mill machinery, has acquired the Haywood Pump & Blower Co., Appleton, Wis. Consolidation eventually will mean expansion of the Middletown plant.

Indiana

LAFAYETTE — Mastoker Inc. will suspend operations at Peru, Ind., and Orrville, O., and establish a plant here in the Schwab Safe Co. plant. Manufacture of stokers will begin in February.

Michigan

ALBION—Albion Motor Products Inc., recently organized with $25,000 capital, will open soon in the plant formerly occupied by the Decker Screw Products Co. Company will manufacture tappets for combustion engines and automobile motors. David F. Greenawalt is president.

DETROIT—Detroit Metal Pickling Corp., 2507 Twenty-fourth street, has been incorporated with $15,000 capital by Albert Langer, 7639 Wetherby street, to pickle and recondition iron and steel.

DETROIT—Gear Grinding Machine Co., Christopher and Conant streets, will build a plant addition. Contract is held by L. R. Hoffman, Grosse Point park, Detroit.

DETROIT — Detroit Gray Iron Foundry, 6403 Wight avenue, Hugh Martin president, will proceed immediately with construction of a new plant unit to be located on Meldrum avenue near Jefferson avenue. Cost is estimated at $100,000. Plant capacity will be increased to 800,000 pounds of castings per day. Provision will be made for five 10-ton traveling cranes and two casting pits, 22 x 170 feet. C. O. Barton Co., 1900 East Jefferson avenue, is contractor. (Noted Aug. 28.)

GRAND RAPIDS—Blackmer Rotary Pump Co., 1809 Century avenue southwest, has a building permit for foundry improvements. Cost is estimated at $3000.

ST. LOUIS—St. Louis Foundry recently was damaged by fire, with loss estimated at $25,000. Undetermined damage to patterns may bring total loss to $50,000. Plant produced automotive parts.

WYANDOTTE—Detroit Brass & Malleable Co., 2968 Seventh street, has awarded contract for a plant addition to W. F. Block.

Illinois

CHICAGO—Harper Wyman Co., 1364 East Seventieth street, has a building permit for a 1-story shop, 40 x 50 feet, to be built at 8562 Vincennes avenue, at a cost of about $7000. Company manufactures gas range supplies.

CHICAGO—Max Schaefer & Co., 367 West Adams street, has been incorporated with $3000 capital by Caplow, Kallen & Caplow, 228 North LaSalle street, to manufacture implements.

CHICAGO—Combination Tools Inc., 2548 West Division street, has been incorporated with $4000 capital by Sissman & Sissman, 32 West Randolph street, to deal in tools.

CHICAGO—Automatic Canning Devices Co., 549 West Randolph street, has been incorporated with $20,000 capital by Phillip P. Sachs, 11 South LaSalle street, to manufacture and deal in household utilities.

DECATUR—City airport commission proposes to launch an airport project, to cost $75,000.

DEKALB—Illinois Power & Light Co., A. D. Mackie general manager, Springfield, Ill., plans to install a new boiler in its plant here. Estimated cost, $90,000.

PEKIN—Machine shops and power house will be constructed here in connection with a refinery to be built by the Corn Products Refining Co., 17 Battery place, New York. Cost of the entire project will approximate $2,000,000.

Southern States

NEW CASTLE, DEL.—International Pipe & Mining Co., 122 East Forty-second street, New York, will establish a cast iron pipe plant here, after acquiring 122 acres and several plant units of the property of the Penn Seaboard Corp. Capacity will reach 150,000 tons annually. Preparations for operations will start in about 60 days.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive alternate bids on schedule 4989, for delivery to Hampton Roads, Va., or to San Francisco, Calif., for one universal and tool grinding machine. Bids will be received on schedule 5010 for delivery to Hampton Roads, for one air compressor with accessories.

WASHINGTON—O. J. Maigne Co., 356 Pearl street, New York, will receive bids about July 1 for a 3-story plant to be erected at 2218 Georgia avenue. Cost is estimated at $40,000. Dodge & Morrison, 160 Pearl street, New York, are architects. Company manufactures printers' rolls. (Noted Sept. 25.)

JACKSONVILLE, FLA.—City, Taylor J. Harris mayor, will vote on bonds for establishment of a large airport in South Jacksonville.

MIAMI, FLA.—All-American Airways Inc., J. H. Wentworth president, Court House road, Safety Aircraft Corp., box 109, and Miami Motor Glider Corp., all affiliated with International Aeronautical Industries, Henry L. Pierce vice president, are reported to plan an extensive aviation project here. Safety company has plans for a new hangar unit, recently noted. Project at airport, Twenty-seventh avenue and Gratigny boulevard, would include main building with two wings each 650 feet, eventual construction of airplane factory and aviation school, machine shops, etc. Plans for main unit are being prepared by Charles P. Nieder, architect, Calumet building. (Noted Jan. 8.)

AUSTELL, GA.—Machine shop and power house will be erected in connection with a thread-spinning plant to be built here by the Clark Thread Co., 2600 Ogden street, Newark, N. J. The entire project will cost about $2,000,000. J. E. Sirrine & Co., Greenville, S. C., are architects and engineers.

MERRERO, LA. — Hope Haven school, Rev. Peter M. H. Wynhaven, director, is asking for bids for a mechanical trades building, to include machine shop equipment.

BALTIMORE—Whiting-Turner Construction Co., Stewart building, is in the market for a crawler type steam shovel and steam crane.

BALTIMORE—Slaysman & Co., 801

East Pratt street, plan an addition for the manufacture of can-making machinery, compressors and presses. Structure will be 23 x 57 feet.

BALTIMORE—Dietrich Bros., tool makers, 220 East Pleasant street, will erect a 1-story addition to their fabricating shop at Twenty-eighth and Reese streets, work to start about Feb. 15. Unit will be 200 x 405 feet, costing approximately $58,000 without equipment. Crane runways will be provided and drills, punches, etc., will be installed.

KNOXVILLE, TENN.—Emory Construction Co., 602 Empire building, is in the market for trenching machinery.

MEMPHIS, TENN.—W. W. Partee, E. L. Bruce Co., Thomas street, is inquiring for a 50 or 75-kilowatt turbo or engine generator set, 3 phase, 60 cycles, 480 volts.

MEMPHIS, TENN. — Mentz Collins Brass Works, 260 North Front street, recently was organized by C. A. Mentz and O. Collins to operate a jobbing foundry for the production of brass, bronze and aluminum castings.

BREMO BLUFF, VA. — Virginia Public Service Co., subsidiary of National Electric Power Co., 57 William street, New York, plans a steam power development here that will cost about $1,000,000.

ROANOKE, VA. — Appalachian Electric Power Co. has plans for the construction of a $1,000,000 hydroelectric power plant on the James river. Maturity indefinite, probably late in 1931.

Missouri

CARTHAGE—Mid-West Steel Products Corp. has been incorporated by Morgan L. King, Carthage, and Clyde W. Ingram, 711 Glenview place, Joplin, Mo.

ST. LOUIS—Railway Safety Derailment Control Inc. has been incorporated with $200,000 capital by J. B. Killian, 3115 Neosho street, to manufacture railway appliances.

ST. LOUIS—Kirk Mfg. Co. has been incorporated with $5000 capital by F. T. Hilliker, 110 South Third street, to manufacture hotel and restaurant equipment.

ST. LOUIS—Union Electric Light & Power Co. is building a substation, 54 x 70 feet, at Linden and Fifteenth streets. Cost is estimated at $150,000.

ST. LOUIS — Chandeysson Electric Co., 4092 Bingham avenue, proposes to build a plant addition, 82 x 200 feet, at a cost of about $35,000. Site is being cleared. Clymonts & Heinicke, 721 Wainwright building, are architects.

ST. LOUIS—Missouri Pacific railroad has secured an interest in a 2000-acre site in North Kansas City and certain rights in the Union Terminal railway and St. Joseph Belt line at St. Joseph, Mo. Total valuation of the property is placed at $20,000,000, and tentative plans are for terminal and shop improvements.

Arkansas

EUREKA SPRINGS—Machine shop of the C. W. Phillips Lumber Co. recently was damaged by fire, with loss estimated at $40,000. James G. Waugh is manager.

Arizona

PHOENIX—Central Arizona Light & Power Co., 300 West Washington street, has awarded contract for a substation to Clinton Campbell, 90 West Moreland street. Cost is estimated at $50,000.

Oklahoma

CUSHING—City will receive bids Feb. 10 for power equipment for a proposed municipal power plant, recently noted. Cost is estimated at $300,000. Preliminary plans were for a 2500-horsepower diesel unit. (Noted Nov. 27.)

PAWHUSKA — City council proposes to purchase a 600-horsepower diesel engine unit for a power project. Cost is estimated at $50,000.

PAWNEE—City council plans to install a diesel engine unit in the municipal waterworks. Estimated cost, $25,000.

Texas

AUSTIN — Purchasing division of state board of control, state capitol building, is receiving bids for a power plant for the Texas prison system near Sugarland, Tex. Giesecke & Harris, Austin, are architects.

BEAUMONT—City, R. C. Black engineer, plans erection of two new pumping plants and remodeling of old plant to cost approximately $200,000.

BEAUMONT—Dr. R. W. Fuller, Kyle building, Beaumont, and John W. Murphy, Houston, Tex., are considering establishment of a plant here or at Houston for the manufacture of hydraulic machines.

FT. WORTH—Texas Rail Joint Co. Inc., R. O. Shaffer manager, subsidiary of Hubbard & Co., manufacturers of shovels and hardware, Granite building, Pittsburgh, is erecting a 1-story plant for steel fabrication and will start operations in February.

PORT ARTHUR—City commission has awarded contracts to W. L. James & Son, Port Arthur, for construction of a central pumping station and to L. S. Vallely & Co., Second National Bank building, Houston, Tex., for foundations and machinery installation, at a total cost of $300,000.

Wisconsin

BLOOMER—City council proposes to erect a municipal light and power plant. A. H. Martin, Prairie du Chien, Wis., will prepare preliminary plans.

GREEN BAY—Fiege Co. has been organized by H. C. Fiege, to manufacture cable and wire rope fittings. Green Bay Drop Forge Co. will handle initial manufacturing operations.

LA CROSSE — Allis-Chalmers Mfg. Co., Milwaukee, is considering retooling its LaCrosse branch plant for the production of several new tractor implements, including a lightweight tractor plow.

MILWAUKEE—A. C. Metal Specialties Inc. has been incorporated with $250,000 capital by Carl Velguth, 1109 Cramer street, to manufacture metal specialties.

MILWAUKEE—Moss Tie Co., Security building, St. Louis, will purchase presses and other machinery for a proposed addition to its Granville plant, near here. Addition will cost about $40,000, and will be 20 x 46 feet. Perry Schjoth is superintendent.

Minnesota

DULUTH—Duluth Steam Corp., J. J. Dwyer general manager, has awarded contract to R. J. McLeod & Co. for an 8-story steam heating plant at Commerce street and Third avenue west, to cost $1,250,000, including four 800-horsepower boilers. Sullivan & Orrfalt, 408 Palladio building, are the architects. Ralph D. Thomas, 1200 Second avenue south, Minneapolis, is engineer.

McGREGOR—General Minnesota Utilities Co., R. P. Allen vice president, Pine City, Minn., has awarded contract to William M. Murphy & Son, 1608 Pioneer building, St. Paul, for a power plant to cost $50,000, including a diesel engine unit. R. B. Fanning, 702 Kasota building, Minneapolis, is engineer. (Noted Nov. 20.)

MINNEAPOLIS—C. W. Olson Mfg. Co., 1300 Northeast Quincy street, manufacturer of ornamental iron, is constructing a 1-story foundry, 31 x 71 feet.

MINNEAPOLIS—Ceco Steel Products Co., subsidiary of the Concrete Engineering Co., Omaha, Nebr., has awarded contract to Naugle-Leck Inc., 518 Baker Arcade, for a 1-story warehouse and shop at Twenty-eighth street and East Hennepin avenue. Unit will be 132 x 149 feet.

ST. CHARLES—City will build a municipal power plant, including a diesel engine unit. Druar & Milinowski, 904 Globe building, St. Paul, are engineers.

STILLWATER — Addition to the foundry at the state prison here is being considered by the state legislature. Proposed unit would cost $25,000. H. W. Austin, state capitol building, St. Paul, is state purchasing commissioner.

ST. PAUL—City council is considering erection of a power plant to furnish light and power for municipal buildings at Hill and Marlet streets. Estimated cost, $250,000.

Iowa

COUNCIL BLUFFS—City council has awarded contract to Riley Nelson

Construction Co. for construction of a hangar unit, 80 x 120 feet, to be erected at municipal airport. Fire recently damaged five hangar units belonging to the city and to commercial organizations.

Nebraska

FALLON—Bureau of reclamation, Denver, will improve the present power plant and construct a new power unit at the Lahontam dam of the Newlands reclamation project. Cost is estimated at $200,000. R. F. Walter, Denver, is chief engineer.

Colorado

DENVER—City council plans to build a new hangar unit at the municipal airport, at a cost of about $40,000. Structure will have about 15,000 square feet of floor space.

Wyoming

TORRINGTON—W. J. Elmore has obtained a lease in the Cook building, Stafford street, for the establishment of a machine shop. Major equipment has been secured.

Pacific Coast

CAPITOLA, CALIF.—Soquel-Capitola sanitary district will build two pumping plants in connection with a sewage treatment project. L. Bowman, court house, Santa Cruz, Calif., is engineer. Cost of the entire project is estimated at $56,000.

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids Feb. 10 on schedule 4988 for one horizontal motor-driven boring, milling and drilling machine and on schedule 4978 for two 16 x 60-inch precision lathes, to be delivered to the navy yard here.

RICHMOND, CALIF.—Atchison, Topeka & Santa Fe railroad, 560 South Main street, Los Angeles, is having plans prepared for a shop here. M. C. Blanchard, 332 North Ridgewood place, is chief engineer.

BREMERTON, WASH.—Bureau of supplies and accounts, navy department, Washington, will receive bids Feb. 10 on schedule 4998 for two pneumatic hoists with capacity of 4000 pounds, for delivery to the Puget Sound navy yard.

Dominion of Canada

VANCOUVER, B. C.—British Engine Co. of Canada Ltd. has been incorporated with 250,000 no par shares by Charles E. Palmer and John L. Dalgleish, to carry on the business of engine manufacturer and brass, gunmetal and iron founder.

WINNIPEG, MAN.—Lasley Canadian Turbine Motor Co. Ltd. has been incorporated with 25,000 no par shares by Theodore A. Hunt and Frederick G. Warburton, to operate as mechanical, electrical and construction engineers.

FERGUS, ONT.—Beatty Bros. Ltd. will erect a plant addition at a cost of about $100,000. Two units, 50 x 100 feet, will be constructed.

FT. FRANCES, ONT.—City council will purchase equipment and build a pumping unit in connection with relocation of the municipal waterworks. Estimated cost, $100,000.

HAMILTON, ONT.—General Smelting Co. of Canada Ltd. has been incorporated with 5000 no par shares by John R. Marshall, 36 James street, to manufacture, smelt and refine metals.

INGERSOLL, ONT.—Miles Automatic Furnace Fans Ltd. has been incorporated with $125,000 and 2500 no par shares by John W. Jamieson and Frederick C. Moore, to manufacture furnaces, ranges, stoves and steam heaters.

LONDON, ONT.—Dean Electric Co. has been incorporated with $40,000 capital by John R. Dean, Wheatley, Ont., and Orville M. Linsley, London, to manufacture and deal in electrical heaters and attachments.

NORTH BAY, ONT.—William Kennedy & Sons Ltd., steel and iron founders, Owen Sound, Ont., will establish a branch plant here and install machinery for the manufacture of steel grinding balls for the mining industry.

ST. CATHERINES, ONT.—Lincoln Foundry & Machine Works Ltd., F. W. Wilson president, is reported to plan the erection of a plant here for the manufacture of hydraulic and dipper dredges.

TORONTO, ONT.—Toronto Brass Machine & Foundry Co., 74 Market street, is having plans prepared for the erection of a 1-story plant unit.

WATERLOO, ONT. — Kitchener Spring Co. Ltd. has been incorporated with $50,000 capital by Gordon R. and Thomas H. R. Brock, to manufacture and deal in wire goods.

WINDSOR, ONT.—Lodge Motors Ltd. has been incorporated with 1000 no par shares by Norman A. McLarty and James W. Reid, to manufacture and deal in automobiles, motor boats and airplanes.

WINDSOR, ONT.—Finn Heater Co. Ltd. has been incorporated with $50,000 and 50,000 no par shares by George W. S. Pulford and George R. Brett, to manufacture and deal in hot water heaters, heating appliances and electrical apparatus.

New Trade Publications

ELEVATORS—A. C. Welchans Elevator Works, Lancaster, Pa., shows in a current bulletin the advance made in elevators within the history of this company's existence. Contrasts are remarkable.

ELECTRIC TOOLS—Hisey-Wolf Machine Co., Cincinnati, presents in a leaflet a comprehensive showing of its electric drills, grinders and buffers, both for hand, bench and floor use. It is well illustrated and brief descriptions cover salient points.

METAL CURB—A circular by the American Rolling Mill Co., Middletown, O., describes use of its metal curb for concrete highway construction. Diagrams show its application in various types of road and advantages of its use are described.

SMALL TOOLS—Quality in drills, cutters, reamers, taps and dies as an element in reducing costs is the theme of a bulletin, No. 8, issued by the Morse Twist Drill & Machine Co., New Bedford, Mass. The bulletin illustrates the care in testing and checking to assure high quality tools.

AIRCRAFT ENGINES—A directory of American aircraft engines, giving ratings, characteristics and special features, has been compiled by the International Nickel Co., 67 Wall street, New York. A page is devoted to each model. Data include a photographic reproduction, type, rating, weight, fuel and oil consumption and a list of nickel alloy parts for each type of motor produced by American manufacturers.

HEAT CONTROL—Control of heat as an essential factor in keeping heat treating costs down is stressed in a folder by the Brown Instrument Co., Philadelphia. It shows application of its pyrometers and automatic control instruments in thirty styles of furnaces designed for heat treating of metals. It is a graphic presentation of the breadth of application of these devices.

REVOLVING CAR DUMPERS — Wellman Engineering Co., Cleveland, has issued a bulletin, No. 93, describing its revolving car dumpers, illustrated by photographic reproductions of numerous installations. Diagrams of construction show details. Automatic features are described and economies in this form of materials handling equipment are stressed.

ALUMINUM WIRES—General Cable Corp., 420 Lexington avenue, New York, in a current bulletin describes its line of insulated aluminum wires and cables. The bulletin presents a technical discussion of conductivity, weight, strength, impedance, skin effect, and current carrying capacity, with a table of comparisons. Consideration is also given to applications of these wires and cables and specific examples of their use.